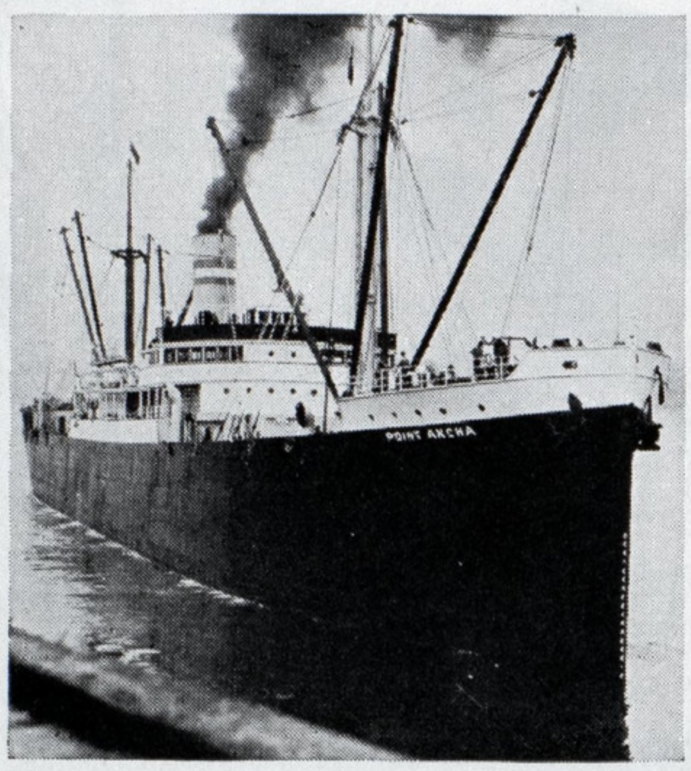
Marine Review

SHIP OPERATION SHIPBUILDING CARGO HANDLING

The National Publication Covering the Business of Transportation by Water

CLEVELAND FOUNDED 1878 NEW YORK



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1050 National Press Building
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London Office, Caxton House
Westminster, S. W. 1
VINCENT DELPORT

Published monthly by
The Penton Publishing Co.
Cleveland, Ohio, U. S. A.

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MARINE REVIEW is published monthly on the first of each month by the Penton Publishing Co., Penton Building, Cleveland, O.; JOHN A. PENTON, Chairman of the Board; C. J. STARK, President; J. D. PEASE, Vice President; F. V. COLE, Secretary.

Member, Audit Bureau of Circulations, Associated Business Papers Inc., and National Publishers Association.

Subscription in the United States and its possessions and in Cuba and Mexico, $3 per year; single copies 35 cents, back numbers over three months 50 cents. Subscription in Canada $4 per year; in Great Britain and other foreign countries £1 per year. Cable addresses: Penton, Cleveland, and Irotrapen, London.

Entered in the post office at Cleveland, O., as second class matter under the act of March 3, 1879.

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Marine Review

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SHIP OPERATION - SHIPBUILDING - CARGO HANDLING

Volume 65 April, 1935 Number 4

The President's Message on Merchant Marine

THE President's message (see Page 10) leaves no doubt in anyone's mind, first that he considers an adequate, efficient American merchant marine in overseas trade necessary to the national welfare, and second that he clearly recognizes that such a merchant marine cannot be built up and maintained under the greater cost of the American standard of living against competition with foreign ships without some form of government aid.

The President therefore makes it clear that he is in agreement with former administrations in their purpose to encourage building up our merchant marine in foreign trade under private ownership and operation. He makes it equally clear, however, that he is not in agreement with the terms of the laws and their administration under which this objective has been pursued in recent years.

He believes that the lending of money for shipbuilding at low rates of interest has been a failure, that only a few ships have been built and that repayments of loans have been uncertain. He is not in favor of the present system of ocean mail contracts and points out that the annual payment on this basis is $30,000,000, that the cost under the usual rates would amount to only $3,000,000 and that the difference, $27,000,000, is merely a disguised subsidy. He does not refer to the fact that the reduction in the annual expenses of operating the shipping board was somewhat more than this amount. The President proposes to end this method of giving aid to the merchant marine and to frankly call such aid as he recommends a subsidy. And no one should quarrel with him on that point.

He suggests to the congress that the proposed subsidy should make up the difference in the cost of building ships here and abroad and also that it should make up the difference in operating cost, and furthermore that consideration should be given to the amount of subsidies paid by other governments to shipping.

No one is likely to disagree in principle on the stand taken by the President. Even such a staunch merchant marine advocate and Republican as Senator Wallace H. White Jr., coauthor of the merchant marine act of 1928, is in general accord with the President's policy. He pointed out, however, that in his own early efforts to secure merchant marine legislation, he incorporated provision for a direct subsidy but that it failed due to opposition by members of the President's own party. He is of the opinion that it is doubtful whether approval can be secured from congress for a direct subsidy and that it would be a simple matter instead to amend the present law to incorporate the recommendations made by the President. He has declared his readiness to co-operate with the administration. While recognizing grave errors in the past in the administration of the provisions for construction loans and mail contracts in the act of 1928 Senator White maintains that the results obtained have justified their enactment and that both should be continued with proper interpretation and application.

As this is written, hearings on the President's shipping recommendations are being held before the house merchant marine and fisheries committee of which Representative S. O. Bland, Democrat of Virginia, is chairman. It is understood that an effort will be made to prepare the new shipping legislation and enact it into law by April 30, if possible.

Whatever the outcome may be nothing should be done to jeopardize the gain already made in providing this country with the beginnings of a real merchant marine in foreign trade. The purpose of the law and its honest and efficient administration should be to eliminate every vestige of improper use of aids granted and that such aids should be wisely applied fully and solely to building up an American merchant marine made up of ships equal to the best in the world, manned and operated with skill and energy by Americans.

Giant Propellers Fitted On Liner Normandie

Preparatory to having her four giant propellers put into place, the new French line turbo-electric flagship NORMANDIE, world's largest ship, was moved into the mammoth Joubert drydock at St. Nazaire on March 17.

The Penhoet shipyards, builder of the NORMANDIE, installed the four great screws, each of which is a single three-leaf piece weighing 23 tons and measuring more than 15½ feet in diameter. They were cast in Deptford, England, and their transfer to St. Nazaire was in itself a considerable feat.

The work of putting the propellers in place it was estimated would take about 15 days after which the NORMANDIE was to be towed back to her basin, where another three weeks' work will be put in on her before she leaves for Havre on April 20, to prepare for her trials.

Ask Bids for Morro Castle, Vessel now Afloat

Announcement has been made by Lieut. Col. E. D. Ardrey, United States district engineer at New York, that bids will be received until March 25 for the MORRO CASTLE, destroyed by fire, off the New Jersey coast, Sept. 8

The hulk of the MORRO CASTLE was finally floated on March 14 and was towed in to Gravesend bay and anchored off Norton's point, Brooklyn,

The President's Message on Shipping

Sent to the Congress on March 4, 1935

TO THE congress of the United States:

I present to the congress the question of whether or not the United States should have an adequate merchant marine.

To me there are three reasons for answering this question in the affirmative. The first is that in time of peace subsidies granted by other nations, shipping combines and other restrictive or rebating methods may well be used to the detriment of American shippers. The maintenance of fair competition alone calls for American flag ships of sufficient tonnage to carry a reasonable portion of our foreign commerce.

Second, in the event of a major war in which the United States is not involved, our commerce, in the absence of an adequate American merchant marine, might find itself seriously crippled because of its inability to secure bottoms for neutral peaceful foreign trade.

Third, in the event of a war in which the United States itself might be engaged, American flag ships are obviously needed not only for naval auxiliaries but also for the maintenance of reasonable and necessary commercial intercourse with other nations. We should remember lessons learned in the last war.

In many instances in our history the congress has provided for various kinds of disguised subsidies to American shipping. In recent years the congress has provided this aid in the form of lending money at low rates of interest to American shipping companies for the purpose of building new ships for foreign trade. It has, in addition, appropriated large annual sums under the guise of payments for ocean mail contracts.

This lending money for shipbuilding has in practice been a failure. Few ships have been built and many difficulties have arisen over the repayment of the loans. Similar difficulties have attended the granting of ocean mail contracts. The government today is paying annually about $30,000,000 for the carrying of mails, which would cost, under normal ocean rates, only $3,000,000.

The difference, $27,000,000, is a subsidy, and nothing but a subsidy. But given under this disguised form it is an unsatisfactory and not an honest way of providing the aid that government ought to give to shipping.

I propose that we end this subterfuge. If the congress decides that it will maintain a reasonably adequate American merchant marine I believe that it can well afford honestly to call a subsidy by its right name.

Approached in this way, a subsidy amounts to a comparatitvely simple thing. It must be based upon providing for American shipping, government aid to make up the differential between American and foreign shipping costs. It should cover, first, the difference in the cost of building ships; second, the difference in the cost of operating ships, and, finally, it should take into consideration the liberal subsidies that many foreign governments provide for their shipping.

Only by meeting this three fold differential can we expect to maintain a reasonable place in ocean commerce for ships flying the American flag and at the same time maintain American standards.

In setting up adequate provisions for subsidies for American shipping the congress should provide for the termination of existing ocean mail contracts as rapidly as possible, and it should terminate the practice of lending government money for shipbuilding.

It should provide annual appropriations for subsidies sufficiently large to cover the differentials that I have described.

I am submitting to you herewith two reports dealing with American shipping: a report of an interdepartmental committee known as the committee on shipping policy, appointed June 18, 1934 by the secretary of commerce, and a report to me from the postmaster general on ocean mail contracts prepared pursuant to an executive order of July 11, 1934.

Reports which have been made to me by appropriate authorities in the executive branch of the government have shown that some American shipping companies have engaged in practices and abuses which should and must be ended. Some of these have to do with the improper operating of subsidiary companies, the payment of excessive salaries, the engaging in businesses not directly a part of shipping, and other abuses which have made for poor management, improper use of profits and scattered efforts.

Legislation providing for adequate aid to the American merchant marine should include not only adequate appropriation for such purposes and appropriate safeguards for its expenditure, but a reorganization of the machinery for its administration.

The quasi-judicial and quasi-legislative duties of the present shipping board bureau of the department of commerce should be transferred for the present to the interstate commerce commission. Purely administrative functions, however, such as information and planning, ship inspection, and the maintenance of aids to navigation should, of course, remain in the department of commerce.

An American merchant marine is one of our most firmly established traditions. It was, during the first half of our national existence, a great and growing asset. Since then it has declined in value and importance. The time has come to square this traditional ideal with effective performance.

Free competition among the nations in the building of modern shipping facilities is a manifestation of wholly desirable and wholesome national ambition. In such free competition the American people want us to be properly represented. The American people want to use American ships. Their government owes it to them to make certain that such ships are in keeping with our national pride and national needs.

SHIPPING POLICY,

Committee Offers Specific Recommendations

WITH his message on shipping, published in full on the opposite page, the President sent to the congress copies of two reports one by the postmaster general on the operation of existing mail contracts, the other by an inter-departmental committee, known as the committee on shipping policy, appointed June 18, 1934 by the secretary of commerce.

The committee was appointed for the purpose of making a comprehensive study of the American merchant marine and to recommend a shipping policy for the government in meeting the problems of the merchant marine. When the committee convened, Secretary Roper outlined the aspects of the shipping problem requiring specific consideration:

1. How large and what kind of a merchant marine should the United States have?

2. What measures should be taken to promote the development and maintenance of an adequate merchant marine?

Before formulating its recommendations the committee consulted with government officials who were closely associated with merchant marine activities. In addition the committee consulted with representatives of steamship and shipbuilding companies and shippers and labor.

Eighteen specific recommendations are given in the report, the first five dealing with the first of the above noted major objectives. All of these recommendations are quoted in full as follows:

1. That the United States should have a merchant marine, to be privately owned and operated by citizens of the United States, composed of the best equipped and most suitable types of vessels capable of serving as an adequate naval and military auxiliary in time of national emergency and of carrying at least one-half of the foreign commerce of the United States.

2. That vessels of this merchant marine be built in the United States, be operated under the American flag and be manned by American officers and men.

3. That the 1929 convention for the safety of life at sea be approved and further, that vessels be built to the highest possible standard of fireproof construction and be provided with the most effective devices for the protection of life at sea.

4. That the highest standards in proficiency of personnel should be developed and maintained.

5. That the merchant marine should be operated and maintained so as to protect the interest of the shipper of American products in having adequate service and parity of rates to foreign markets.

Two Subsidies Proposed

The remaining thirteen recommendations, quoted in full below, deal with the second objective:

6. That since the present system of aid furnished through mail pay has been demonstrated to be unsound, we recommend that the following methods of direct subsidies be substituted therefore:

(a) That a capital subsidy be provided to take care of differentials between domestic and foreign cost of construction of vessels in foreign trade and to take care of the cost of such special features as may be required by the navy department, to be paid directly to the shipbuilders; but if such ships are entered in the coastwise trade, the owner should be required to reimburse the government pro rata based on the life of the ship.

(b) That an operating subsidy be provided to take care of differentials between domestic and foreign operating costs in specific services and trade routes, to be paid to the ship operator, but subject to review from time to time as either party to the contract may demand. The contract providing for such payments shall be based on an assumed useful life of twenty years for the ship, and benefits payable only when engaged in foreign commerce. In determining the amount to be paid as an operating subsidy, consideration should be given to the possibility of a substitution in part for crews' wages by an allowance to be paid to said personnel as members of the United States merchant marine naval reserve.

(c) That there be provided a fund to be available for use when considered necessary and not inconsistent with the public interest, to assure a fair rate to shippers of American goods, to enable American ship operators to carry an equitable share of our foreign commerce, or to insure American flag lines equitable consideration in conference agreements.

(d) That the use of the construction loan fund and insurance fund be continued and that its purpose be broadened to meet emergency needs and extraordinary situations.

(e) In the administration of these subsidies we believe that the merchant marine can be strengthened and private capital attracted by the elimination of weak services. Therefore, following the termination of any existing contracts providing government aid and before entering into any contract providing for any form of government aid by way of direct subsidy, the proper governmental agency shall find with respect to the line in question the existence of public necessity and convenience and responsibility of the operating company; and based on this principle, it shall encourage consolidation of lines where these elements do not exist with lines where these elements do exist.

A Federal Marine Authority

7. That for the purpose of administering the above forms of government aid; and in order to coordinate all governmental functions in maritime affairs, it is recommended:

(a) That the designation "shipping board bureau" be abolished.

(b) That a new office be set up in the department of commerce headed by an assistant secretary of commerce for maritime affairs, whose tenure of office, as a matter of policy, should be made as permanent as practicable, and that under this office there should be grouped all of the bureaus and units of the government dealing with merchant marine affairs, except such as the President may except. That all functions of the shipping board bureau, except study, analysis, recommendations and regulations, should be transferred to this new office. It shall be the duty of this new office to administer, under the policies outlined by the federal maritime authority mentioned in paragraph (c) below, the contracts providing governmental aid in recom-

mendation No. 6.

(c) That there be established a federal maritime authority composed of two types of members—

(1) Personnel serving long term appointments in order to insure continuity of policy, to be appointed by the President and confirmed by the senate, and

(2) Personnel representing other governmental departments to be designated by the President.

That in addition thereto, there be established an advisory council representing industry and labor, appointed by the President.

(d) That the Federal maritime authority be charged

(1) with the duty of studying all national maritime problems and their proper relationship to trade and commerce;

(2) the analysis and editing of pertinent data and development of plans for construction and efficient operation of vessels, taking into consideration the benefits accruing from standardized production where practicable;

(3) the determination of the amount of subsidies;

(4) in connection with these subsidies to study in what manner the revenue might be increased by aggressive advertising and solicitation on the part of the operators;

(5) the regulation of rates in foreign commerce and temporarily in domestic commerce until such time as another body may be charged with the regulation of all domestic transportation rates;

(6) the review and settlement of all maritime labor problems;

(7) the formulation of appropriate instructions to the office referred to in paragraph (b) above.

It shall be the further duty of the federal maritime authority to prescribe the necessary steps to safeguard public interest in the administration of all forms of financial aid, including the prescribing of uniform accounting systems subject to government audit for all construction companies receiving governmental aid, including affiliates and subsidiaries, whether or not receiving subsidies.

Every Carrier to Report

8. That section 21 of the shipping act of 1916, as amended, granting authority for requiring certain reports, records, rates, etc., to be filed by common carriers by water and other persons subjected to said act, be extended to include any person carrying on the business of chartering or managing any steamship operation or furnishing stevedoring.

9. That the secretary of commerce may require the filing of any or all charter parties, rates, fares, charges or classifications for all classes of domestic or foreign commerce, within such times as may be prescribed by him before same shall take effect.

10. That an adequate merchant marine naval reserve be developed and that funds be provided to pay officers and men of the merchant marine naval reserve as now authorized by law. The funds thus paid would serve the triple purpose of raising the standards of personnel in the merchant marine, of meeting in part the wage differential element of the proposed operating subsidy and of creating a valuable reserve of trained personnel for the navy. Such funds should be obtained as part of the proposed subsidy and not as a naval appropriation.

Training, Treatment of Seamen

11. That the present law be amended

(a) To permit the proper examination of able seamen under the direction of the secretary of commerce.

(b) To permit the use of continuous discharge books, and provide for the setting up of tribunals to which a man may appeal in the event that he feels that entries made by the master are unfair.

(c) To permit the master of a vessel, in his discretion, similar to the practice in other maritime countries, to withhold the payment of wages at any port, when he feels that the efficiency of the ship would be impaired. Nothing in the above to allow withholding of any wages at the end of the voyage.

12. (a) That with the exception of the steward's department, the licensed and unlicensed ship personnel be 100 per cent American, either native born or naturalized, unless ruled otherwise by the secretary of commerce.

(b) That licenses issued by the bureau of navigation and steamboat inspection be required for wireless telegraphers; and that pursers, assistant pursers, stewards and assistant stewards and any others who are responsible for life in case of disaster, or responsible for the safety of the ship, and other such personnel to be designated by the secretary of commerce be required to qualify for certificates.

(c) That a three-watch system on the deck and in the engine room be made mandatory, and penalty provided for each offender, except as otherwise authorized by the secretary of commerce.

(d) That minimum wages of unlicensed personnel be determined by the federal maritime authority. This recommendation shall not be construed as a denial of the right of the employers and employes to bargain collectively in the matter of higher wages and better working conditions.

(e) That the question of wages and settlement of labor disputes be specifically made one of the functions of the federal maritime authority.

(f) That the federal maritime authority give careful study to all labor conditions and to the question of requiring continuous employment of merchant marine personnel.

About Existing Contracts

13. That enabling legislation be enacted authorizing adjustments of the obligations arising under present forms of financial aid, including mail contracts, as to permit them to be altered, amended, modified or terminated, in a fair and equitable manner with due consideration of studies to be made of the trade routes and the public convenience and necessity in each case.

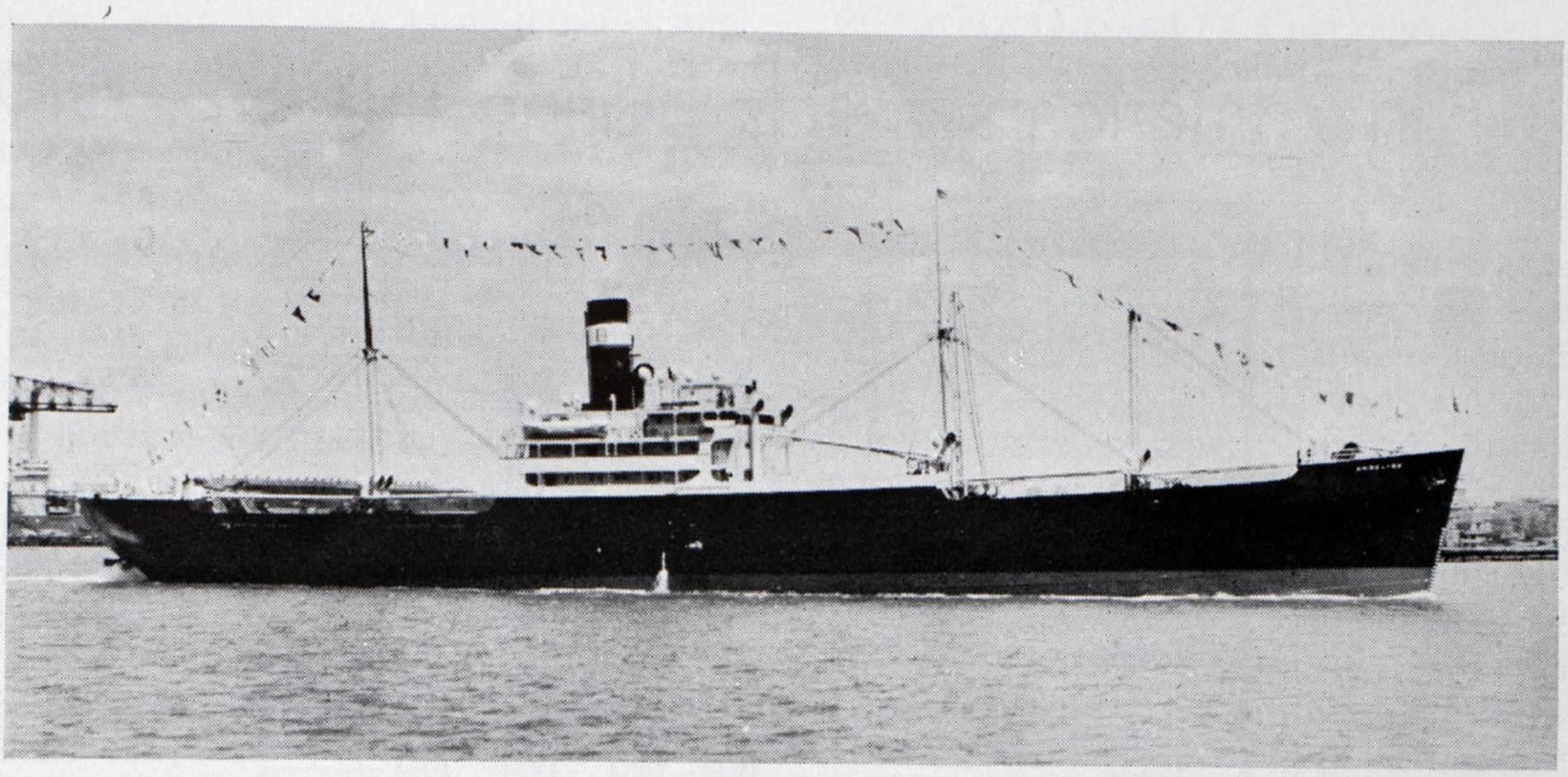
14. That the disposition of the present laid-up fleet under control of the shipping board bureau be determined by the federal maritime authority, having in mind the desirability of scrapping that part of the fleet which is admittedly obsolescent and retaining the balance of the fleet until such time as new construction insures sufficient naval auxiliaries for national defense and thereafter giving further consideration to the scrapping of said balance of the fleet as beyond economical usefulness.

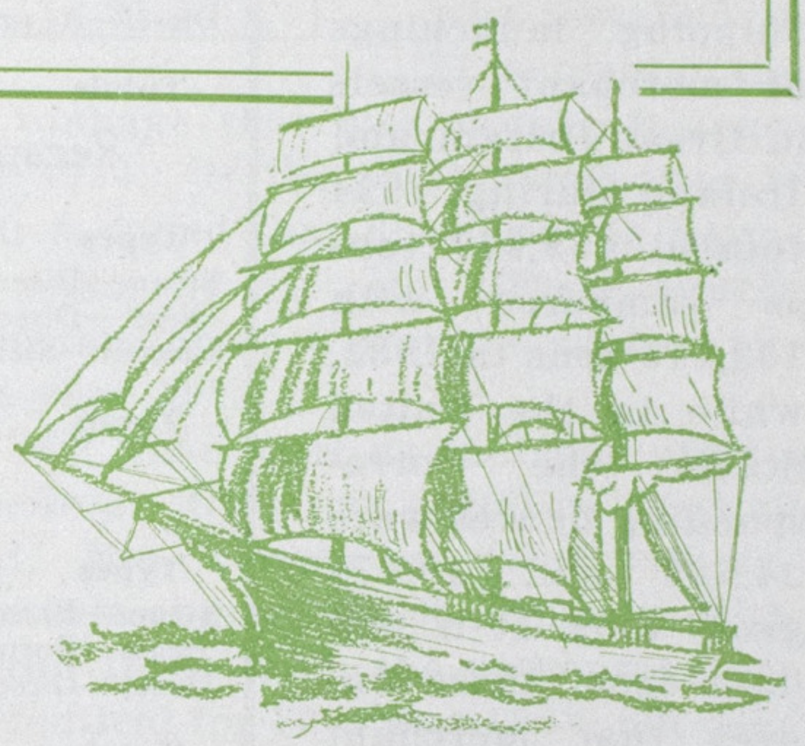
15. That adequate facilities for an efficient shipping and employment service be maintained by the government in the principal ports of the United States for the purpose of providing employment service.

16. That in view of the recommendations contained in this report, the committee does not deem it advisable to proceed with the proposed shipping code in connection with foreign commerce.

17. Participation by representatives of American ship operators in the preliminary international conference of operators held in London in January, 1935, has heretofore been advised by the government, and it is now recommended that this government, within the limits of its merchant marine policy, encourage efforts to work out rationalization of tonnage and rate stabilization in particular services, by some form of international agreement.

18. That public vessels of the United States shall not engage in the carrying of private passengers and cargo where such carrying constitutes competition with existing available American flag services.





Marine Progress

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SHIPS

Marine Review &

April 1935

SHIPBUILDING

In American Yards During the Year 1934

SHIPBUILDING in merchant vessels throughout the world during 1934 was almost double that of 1933; a gain of 478,000 tons over 1933 and a gain of 241,000 tons over 1932. According to figures compiled by Lloyd's Register of Shipping, launchings of merchant vessels in Great Britain and Ireland during 1934 totaled 459,877 tons as compared with 133,115 tons in 1933, while in the United States the corresponding figures were 24,625 and 10,771 gross tons. It is evident from these figures that merchant shipbuilding in the United States, even though the tonnage was more than double, has so far shown little or no recovery. It is true, however, that orders for vessels for departments of the government other than the navy, have added materially to the shipbuilding activity and a number of the yards have been operating at a fair rate of capacity. Elsewhere in this issue will be found a summary of the large naval program now under way in private shipyards and navy yards.

Motive Power Compared--Two Years

Types	Number 1934	Number 1933	Per Cent 1934	Per Cent 1933
Steam reciprocating coal burner	1	1	1.7	1.5
Steam reciprocating oil burner.	8	9	13.1	13.4
Steam turbine oil burner.....	16	13	26.2	19.4
Diesel engine direct drive.....	28	34	45.9	50.8
Diesel engine electric drive....	8	9	13.1	13.4
Turbine electric oil burner.....	0	1	0.0	1.5
Totals.....	**61**	**67**	**100.0**	**100.0**

Recapitulating for Primary Power

Types	Number 1934	Number 1933	Per Cent 1934	Per Cent 1933
Steam—As primary power....	25	24	41.0	35.8
Diesel—As primary power.....	36	43	59.0	64.2
Totals.....	**61**	**67**	**100.0**	**100.0**

Recapitulating for Power at Propeller

Types	Number 1934	Number 1933	Per Cent 1934	Per Cent 1933
Steam—Direct and gears.....	25	23	41.0	34.3
Diesel—Direct Drive.....	28	34	45.9	50.8
Electric—Steam and diesel....	8	10	13.1	14.9
Totals.....	**61**	**67**	**100.0**	**100.0**

Recapitulating for Fuel

Types	Number 1934	Number 1933	Per Cent 1934	Per Cent 1933
Steam—Burning coal.....	1	1	1.7	1.5
Steam—Burning fuel oil.....	24	23	39.3	34.3
Diesel—Diesel oil as fuel.....	36	43	59.0	64.2
Totals.....	**61**	**67**	**100.0**	**100.0**

In the accompanying review and analysis of steel, powered, merchant type of vessels of 100 gross tons and over or 100 feet in length and up, under construction or contracted for in shipyards of the United States during the calendar year of 1934, the marked effect of building service vessels for government account, other than naval vessels, is very evident. This marks the twelfth consecutive year such a review and analysis has been presented. Only government vessels of what might be termed merchant type, such as lighthouse tenders, coast guard cutters and patrol boats, dredges and other craft for the engineer corps, are included in this survey.

On pages 40 and 41 will be found a listing of all vessels in this category for 1934. In this tabulation the name of the shipyard, owner, type of vessel, machinery and principal dimensions are noted.

This listing fairly represents the activity of American shipyards in the class of vessels covered. It does not cover any wooden construction nor does it include non-propelled craft such as scows, barges, lighters, and similar vessels of which there has been a considerable volume in a number of the smaller shipyards.

The number of vessels listed for the year 1934 is 61 as compared with 67 for 1933, 75 for 1932, 94 for 1931, 130 for 1930, 145 for 1929, 92 for 1928, 105 for

Analysis of Power and Gross Tonnage of Vessels Listed on Pages 40-41

Type of Power	Number of Vessels	Total Gross Tons	Total Horsepower	Average Gross Tons	Average Horsepower
Turbine Gears...	16	58,100	70,800	3,631	4,425
Reciprocating...	9	12,574	14,000	1,397	1,556
Diesel Electric...	8	3,353	5,140	419	643
Diesel Direct....	28	15,518	22,960	554	820
Totals.....	**61**	**89,545**	**112,900**	**1,468**	**1,851**

Note: Gross tonnage for government vessels where not given, has been taken at one and one-half times the displacement.

1927, 121 for 1926, 107 for 1925, and 102 for 1924.

From the list of vessels that were under construction last year, 18 have been selected and have been illustrated and described in a uniform manner, giving the essential characteristics of hull and machinery. Because of sister ships, the 18 vessels so described in the following pages represent 39 or nearly two-thirds of all the vessels listed. The vessels illustrated and described cover the whole range of shipbuilding from a large ocean going tanker to a river tow boat. Since the beginning of this method of presentation some 272 different vessels of merchant type, built in the United States, and used in all the various branches of water transportation, have been described and illustrated.

A group analysis has been made of the 61 vessels for type, propelling machinery, size and fuel. The results of this analysis are noted in the accompanying tables. For primary power, the diesel engine was used in 36 while 25 were fitted with steam. This, of course, applies to number of units, and therefore in 59 per cent of the number of units the primary power was the diesel engine and in 41 per cent of the units steam was used. For 1933, these figures were respectively 64.2 per cent and 35.8 per cent; for 1932, they were 50.7 per cent and 49.3 per cent; and in 1931, they were 38.3 per cent and 61.7 per cent. In 1930 they were respectively 46.2 and 53.8 per cent.

The good showing made for diesel power in these percentages is due to the number of smaller vessels. If we consider the application of steam and diesel on the basis of tonnage, it will be quite different as shown in the table at the bottom of the page 14. This shows that diesel power was installed in 21 per cent of the total gross tonnage that was under construction in 1934. If the total horsepower is considered it is found that diesel power represented just under 25 per cent. These figures for 1934 show an increase over the similar figures for the year 1933.

As noted last year, coal as fuel has practically disappeared. Only one vessel is listed as burning coal. Nine vessels are fitted with reciprocating steam engines which compares with 10 in 1933 and 16 in 1932; the percentage being almost identical for 1934 and 1933, but considerably less than the 21.4 per cent for 1932. No less than 16 out of the 61 vessels listed were fitted with turbine reduction geared drive, while turbine electric drive was not used in any vessel listed.

ANALYSIS OF AMERICAN MERCHANT SHIPBUILDING—1934
COMPILED BY MARINE REVIEW

TYPES OF VESSELS	NUMBER	TURBINE OIL	TUR. ELEC. OIL	DIESEL OIL	DIES. ELEC. OIL	RECIP. OIL	RECIP. COAL
PASSENGER—OCEAN							
PASSENGER—COAST	1			1			
FREIGHTER—OCEAN	2	2					
TANKER—OCEAN	2	2					
TANKER—COAST	5			5			
TANKER—CANALS, BAYS	3			2	1		
FERRY—HARBOR, BAYS	2			1		1	
TOWBOAT—HARBORS	1			1			
TOWBOAT—RIVERS	8			5		2	1
DREDGE—BAYS, RIVERS	3					3	
FISHING—OCEAN	3			3			
SPECIAL—OCEAN	8	7			1		
SPECIAL—COAST	15	5		9		1	
SPECIAL—LAKES, BAYS	3			1	2		
SPECIAL—BAYS, RIVERS	5				4	1	
TOTALS	61	16		28	8	8	1

Distinctive Ships—Where To Find Them

Freighter

Name and Service	*Page*
Angelina, Ocean	19

Tankers

Franklin, Coastwise, Canals, Lakes	39
M. A. Powers, Coastwise	32
Poughkeepsie Socony, Coast, Canals, Lakes	26
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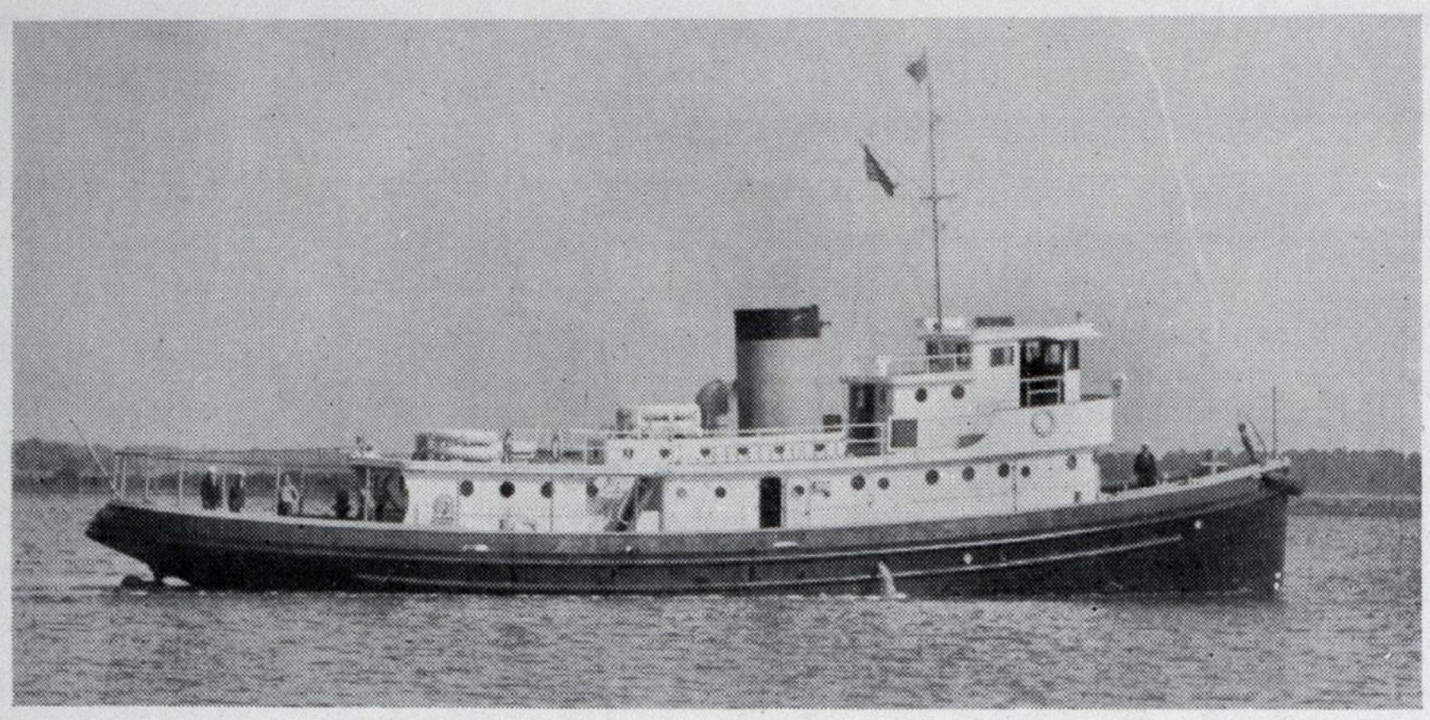
CALUMET—Coast Guard Cutter—Single Screw—Diesel Electric



Name—CALUMET
Owner—United States Coast Guard
Builder—Navy Yard, Charleston, S. C.
Naval Architect—United States Coast Guard
Launched—Sept. 28, '34; **Comp.** Nov. 28, '34
Sister Ships—NAVESINK, TUCKAHOE (built at Charleston Navy Yard) and HUDSON (built at Portsmouth, N. H.). Launched NAVESINK and TUCKAHOE, Sept. 28, 1934; HUDSON, Oct. 5, 1934. Completed, respectively, Dec. 29, 1934; Jan. 15, 1935 and Nov. 8, 1934.
Classification—Owner's requirements

HULL PARTICULARS

Length over all, 110 feet, 6 inches; length between perpendiculars, 104 feet; breadth molded, 24 feet; depth molded, 12 feet, 7 inches; draft, mean, 9 feet, 1½ inches, (maximum, aft, 10 feet, 8 inches); displacement loaded 290 tons; bunker diesel fuel capacity, about 3800 gallons; speed, designed, 12 knots.

MACHINERY PARTICULARS

Main Engines—Two, 6-cylinder, 4-cycle, solid injection, single acting, trunk piston, diesel engines, of 12½-inch bore by 13-inch stroke, each developing 530 brake horsepower at 550 revolutions per minute; built by McIntosh & Seymour Corp. One engine turns right hand and the other left hand, both turning outboard. Each engine is direct connected to a generator and exciter.

Main Generators—Two General Electric, each of 325 kilowatts, at 550 revolutions per minute, 1300 amperes, 250 volts, direct current. Separately excited from two 120-volt, 25-kilowatt, exciters on extensions of main generator shafts. Each of these generators is driven by one of the above described diesel engines at 550 revolutions

Main Propulsion Motor—One, 800 horsepower, double armature, direct current, shunt wound, General Electric motor, developing 400 brake horsepower for each armature at 1285 amperes, 250 volts, at 250 revolutions per minute; separately excited at 120 volts.

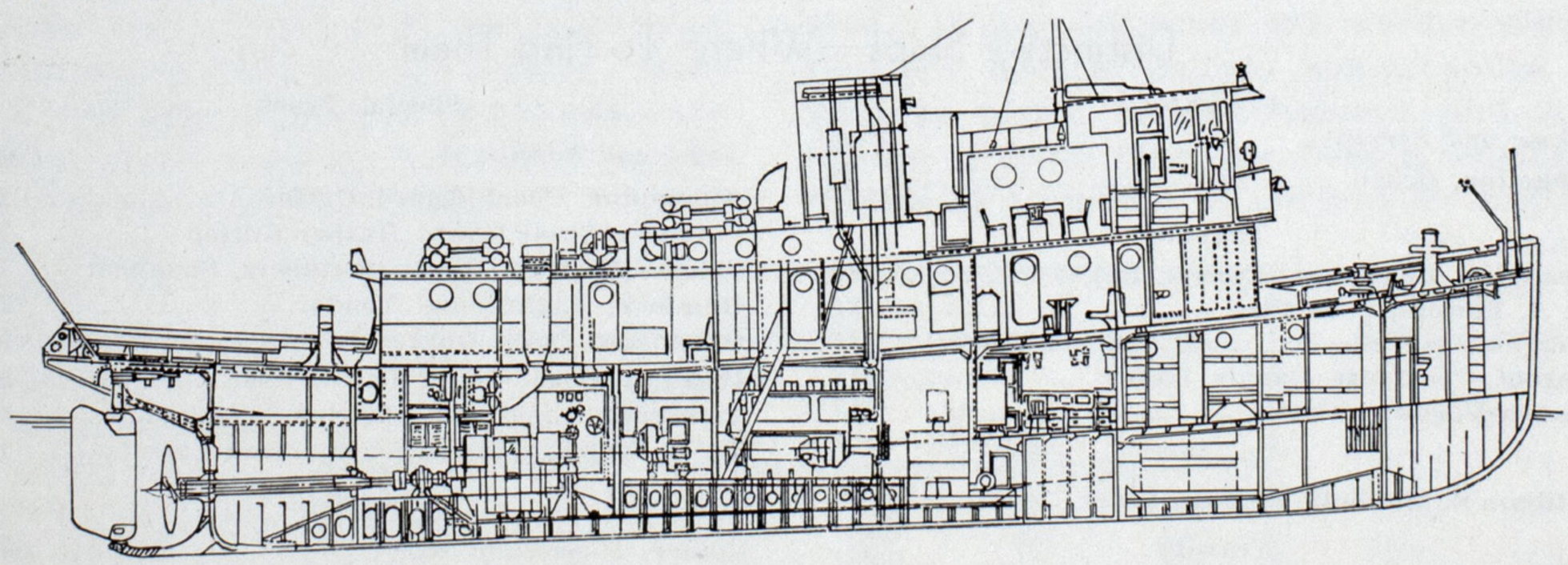
Auxiliary Generator—One, 2-cylinder, 5½-inch bore by 9-inch stroke, 26-horsepower, 600 revolutions per minute, McIntosh & Seymour diesel engine driving one General Electric generator, 15 k.w., 125 volts, and 120 amperes.

AUXILIARY EQUIPMENT

Pumps—Fairbanks, Morse; Buffalo; Goulds, Pennsylvania Pump & Comp. Co.; Barnes
Steering—Electro-mechanical, Sperry
Searchlights—Sperry Gyroscope Co.
Propellers—Navy Yard, Philadelphia
Refrigeration—Carrier-Brunswick, Int. Inc.
Windows—Kearfott Engineering Co. Inc.
Sleeve (Pro. Shaft)—Shenango-Penn Mold
Spark Arrester—Engineering Specialties Co.
Iron Plating—Hull, deck, A. M. Byers Co.
Hardware—The Dayton Mfg. Co.
Galley Range—Elisha Webb & Son Co.
Clocks—Chelsea Clock Co.
Silencer—The Maxim Silencer Co.
Stern Bearing—Rubber, B. F. Goodrich Co.
Thrust Bearing—Timken Roller Bearing Co.

DESCRIPTION

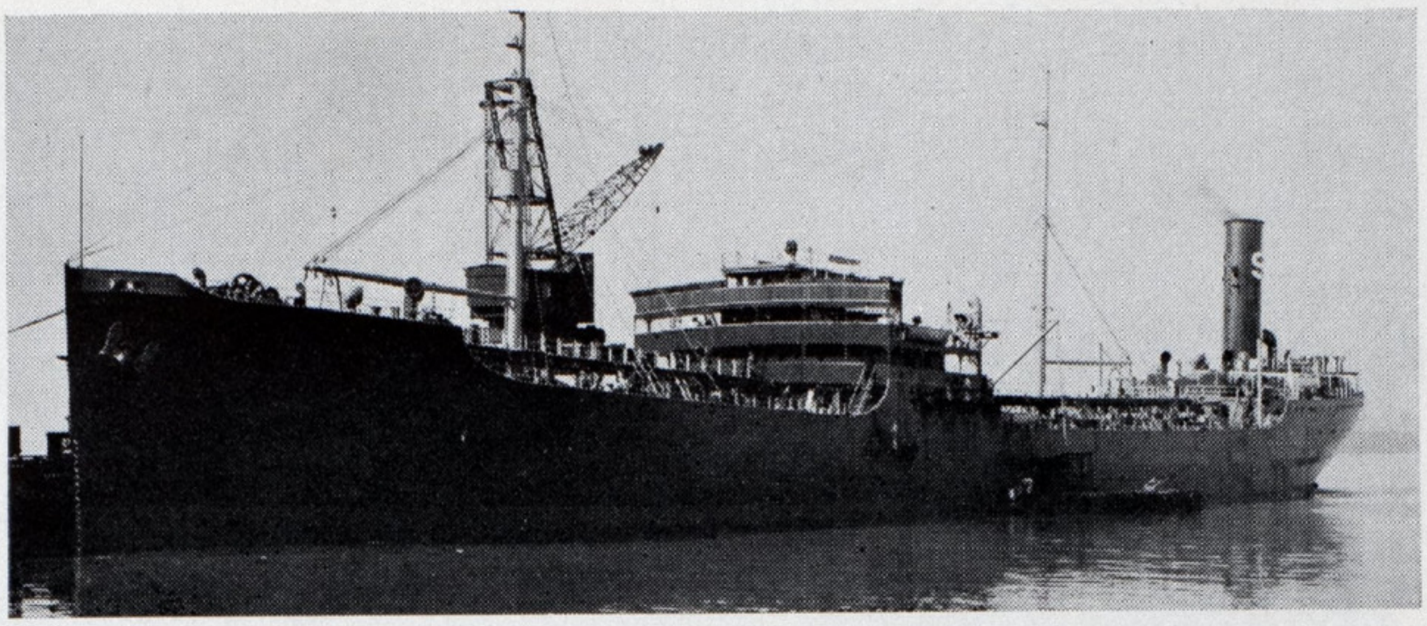
The CALUMET and three sister vessels were designed especially for harbor use. The hull construction is rugged. For the size of power used they may be said to represent the latest development in modern marine engineering as applied to diesel electric drive.



SOCONY VACUUM—Tanker—Ocean—Single Screw—Turbine

DESCRIPTION

This vessel and her sister ship the MAGNOLIA, two large ocean going tankers, of single screw modern steam turbine geared drive, represent an outlay of about $2,000,000 each, and were also the largest merchant vessels under construction in American shipyards during 1934.



Name—SOCONY-VACUUM
Owner—Socony-Vacuum Oil Co. Inc.
Builder—New York Shipbuilding Corp.
Naval Architect—N. J. Pluymert
Launched—Jan. 18, '35; **Comp.** March, 1935
Sister Ship—MAGNOLIA, not yet launched. Completed, schedule for April, May 1935.
Classification—American Bureau of Shipping

HULL PARTICULARS

Length over all, 500 feet, 1½ inches; length between perpendiculars, 484 feet; breadth molded, 65 feet, 9 inches; depth molded, 37 feet; draft loaded, 29 feet, 10¼ inches; displacement loaded, about 20,700 tons; gross tonnage, about 9200; net tonnage about 5700; deadweight capacity, about 15,285 tons; cargo capacity, in barrels, 106,462; bunker fuel oil capacity, 1365 tons; speed, 12½ knots.

MACHINERY PARTICULARS

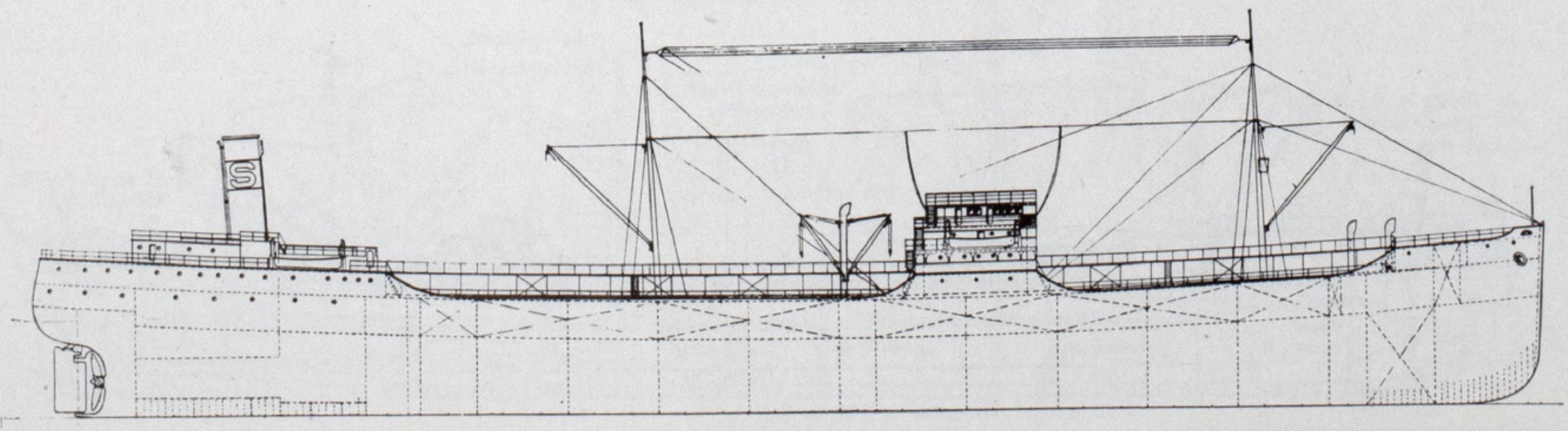
Main Engine—One, double reduction geared turbine, built by The De Laval Steam Turbine Co.; size, developing 4000 brake horsepower at 75 revolutions per minute of the propeller.

Boilers — Three, Foster Wheeler marine watertube boilers. Two of these boilers are for the main drive and have a combined heating surface of 6814 square feet; also a combined heating surface of 4608 square feet in the economizer; making a total water heating surface, for the maindrive, of 11,422 square feet. The operating pressure is 400 pounds gage, with superheat to give 700 degrees Fahr. final steam temperature. The third boiler which is for operating the cargo pumps is not fitted with superheater but otherwise operates under same steam conditions; the heating surface is 4300 square feet. The boilers are oil-fired using Todd oil burning equipment. Soot blowers Diamond Power Specialty Corp.

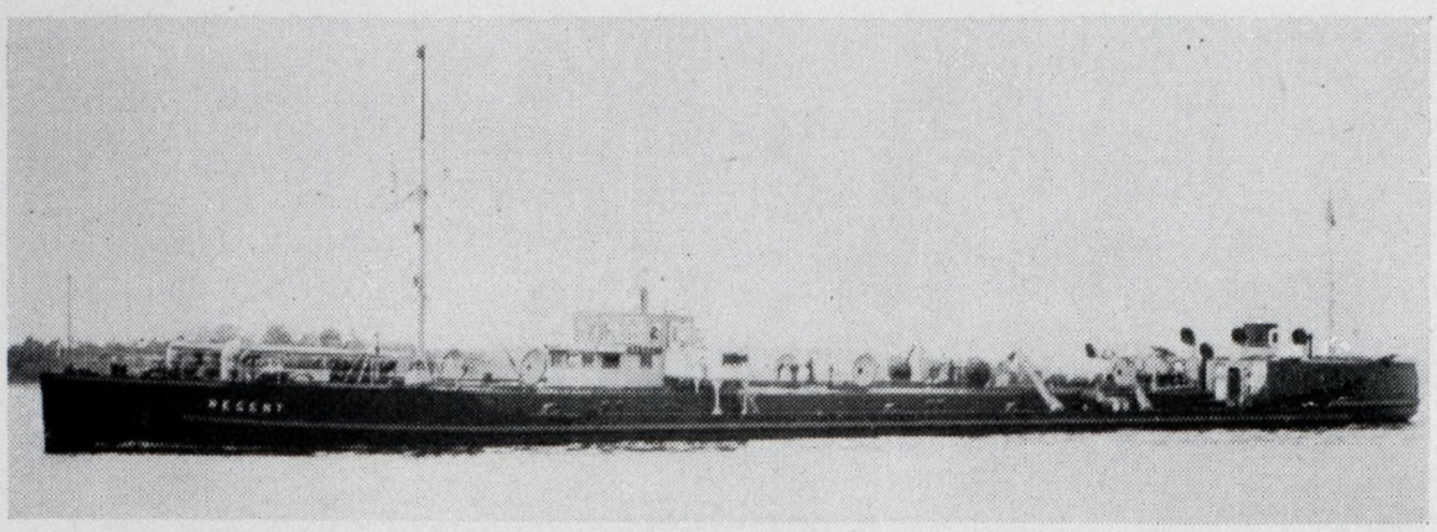
Auxiliary Generators—Three, General Electric, turbine driven; two of 75 kilowatts each and one of 20 kilowatts.

AUXILIARY EQUIPMENT

Pumps—De Laval; Dean; Kinney; Northern; Terry; and Rumsey
Windlass, Winches—American Eng. Co.
Steering Engine—American Engineering Co.
Propellers—Cramp Brass & Iron Foundries
Refrigeration—Carrier-Brunswick Int. Inc.
Chain Cable—National Mal. Steel Cast. Co.
Anchors—Baldt Anchor Chain & Forge Co.
Oil Purifier—The De Laval Separator Co.
Recorders (CO_2)—The Permutit Co.
Davits, Lifeboats—Welin Davit & Boat Corp.
Radio Equip.—Mackay Radio Telegraph Co.
Compass—Kelvin & Wilfrid O. White Co.
Sounding Mach.—Kelvin & Wilfrid O. White
Gyro Compasses, Gyro Pilots—Sperry
Thrust Bearings—Kingsbury Machine Works
Turbines (Aux. drives)—Kearfott Eng. Co.
Framing (bracketless system)—Isherwood
Galley Equip.—Edison G. E. Appliance Co.
Flooring—Selby, Battersby & Co.
Copper Convectors—Chase Brass & Copper Co
Air Ejectors, etc.—Schutte & Koerting Co.
Wrought Iron Pipe, Rivets—A. M. Byers Co.
Galley Range—Elisha Webb & Son Co.
Steam Traps—Cochrane Corp.
Clocks—Chelsea Clock Co.



REGENT—Tanker—Canals, Lakes—Twin Screw—Diesel



Name—REGENT
Owner—Gulf Refining Co.
Builder—Bethlehem S. B., Spar. Pt. Plant
Naval Architect—Owner's design
Launched—June 22, '34; **Comp.** Aug. 28, '34
Classification—American Bureau of Shipping

HULL PARTICULARS

Length over all, 255 feet; length between perpendiculars, 247 feet; breadth molded, 40 feet; depth molded, 14 feet, 6 inches; draft (canal), fresh water, 9 feet, 6 inches; draft loaded, salt water, 12 feet; displacement on 12-foot draft, 2700 tons; gross tonnage, 1211; net tonnage, 708; cargo capacity, 15,400 barrels; bunker diesel fuel capacity in tons, 40; speed, 9½ knots.

MACHINERY PARTICULARS

Main Engines—Two, 4-cycle, 6-cylinder, single acting, heavy duty, mechanical injection, direct reversing, diesel engines, built by McIntosh & Seymour Corp. Size, 14½-inch bore and 22-inch stroke; each engine developing 425 brake horsepower at 280 revolutions per minute.

Auxiliary Generators—Three, Diehl Mfg. Co. direct current, each 50-kilowatt capacity. Each generator is direct connected to an Atlas Imperial Diesel Engine, 4-cylinder, 7-inch diameter and 8½-inch stroke, developing 75 brake horsepower.

AUXILIARY EQUIPMENT

Pumps—Waterous (cargo), Carter
Windlass—American Engineering Co.
Winches—American Engineering Co.
Steering Engine—American Engineering Co.
Propellers—Bethlehem Steel Co.
Refrigeration—Westinghouse Elec. & Mfg. Co.
Davits, Lifeboats—Welin Davit & Boat Corp.
Oil Purifiers—The Sharples Specialty Co.
Flooring—Selby, Battersby & Co.
Thrust Bearings—Kingsbury Machine Works
Storage Battery—Thomas A. Edison Inc.
Fire Exting.—C-O-Two Fire Equipment Co.

DESCRIPTION

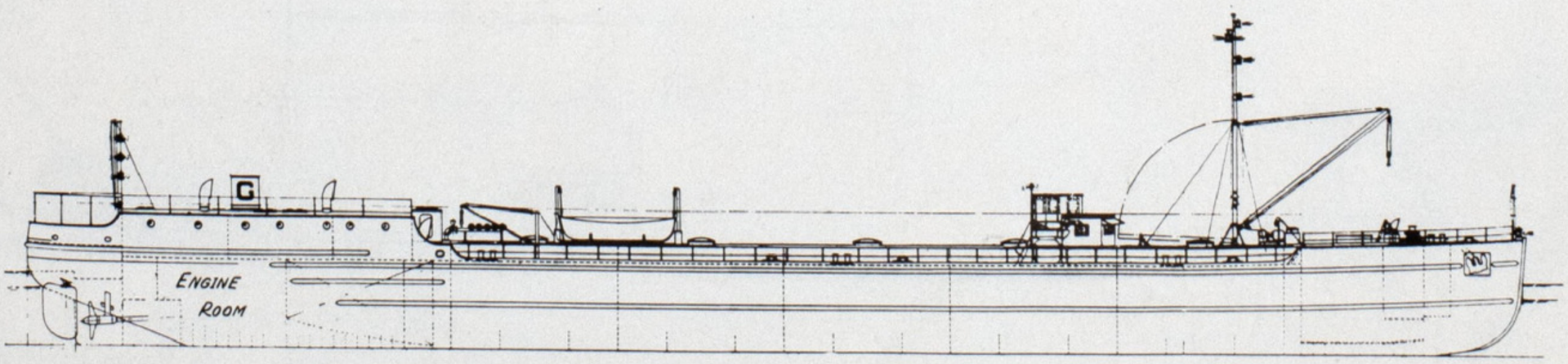
Generally similar to other tankers for the Barge Canal - Great Lakes-coastwise service of the owner. She is substantially larger than the HARMONY and the SUPREME, built in 1931, having a cargo capacity of 15,400 barrels.

REMARKS

This vessel is constructed on the Isherwood bracketless system. Machinery is located aft and occupies about 56 feet of the space forward of the after perpendicular. Immediately forward of the machinery bulkhead is the pump room occupying a space across the vessel and 8 feet fore and aft. From the forward bulkhead of the pump room the hull is divided into five cargo oil tanks each 28 feet, 5 inches in length. Forward of No. 1 cargo oil tank is a 3-foot cofferdam and forward of the cofferdam is a dry cargo hold 21 feet in length. The forward pump room occupies a space 7 feet in length forward of the dry cargo hold and down to a flat about 5 to 6 feet above the bottom of the ship.

All top gear on this vessel is arranged to give a maximum clearance of 13 feet, 9 inches above the canal draft of 9 feet, 6 inches. This can be accomplished with a minimum of trouble when operating under fixed bridges on the canal. This vessel was designed by the marine department of the Gulf Refining Co. and a number of features have been introduced to improve the working of the ship.

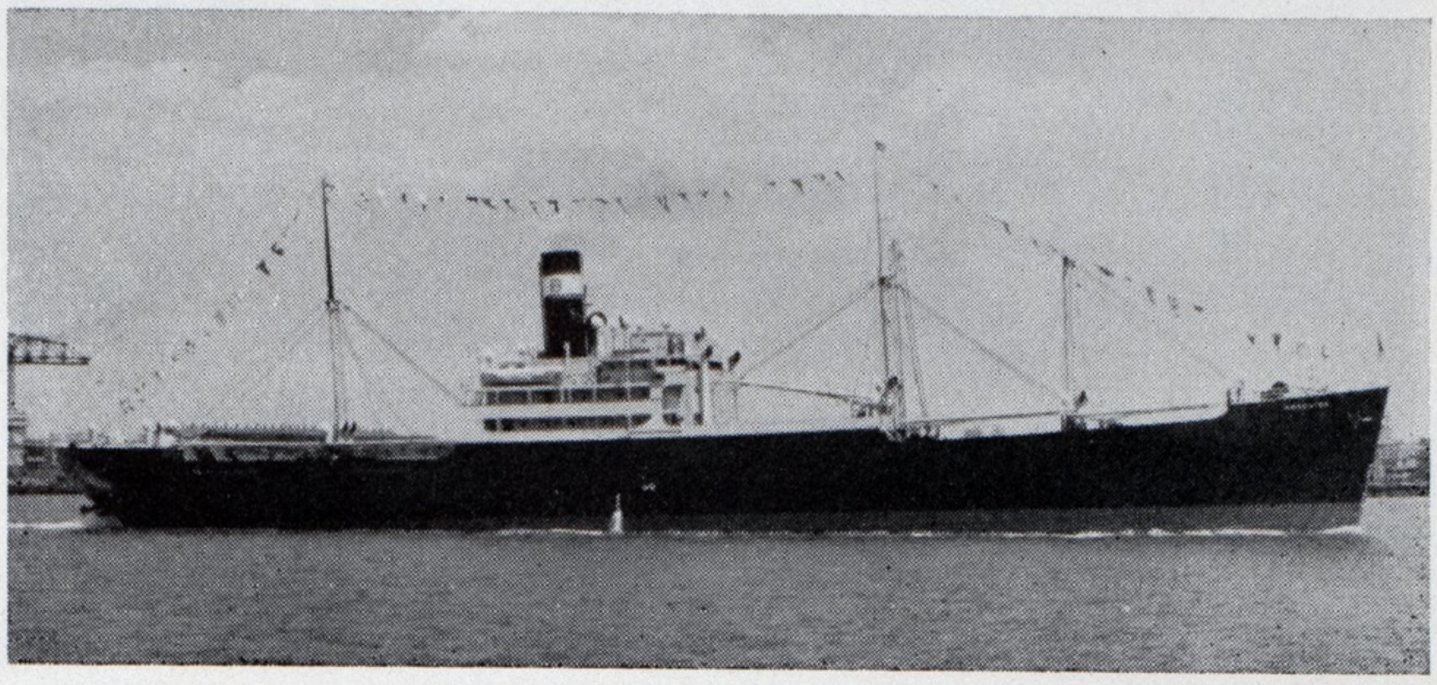
The REGENT is the sixth vessel in the Gulf fleet's service on the New York Barge canal, Great Lakes and coastwise points and is practically the ultimate allowable size for transit through the canal. The mast is hinged for low clearance points and a portable house arrangement has been worked out for use when the vessel is in coastwise service.



ANGELINA—Freighter—Ocean—Single Screw—Turbine

DESCRIPTION

The ANGELINA and sistership MANUELA are the first general cargo ships built in this country since 1921. Although classified as freight ships, they each have accommodations for 12 passengers in six staterooms. Of trim attractive lines, they have somewhat the appearance of passenger vessels.



Name—ANGELINA
Owner—A. H. Bull Steamship Co.
Builder—Newport News S. B. & D. D. Co.
Naval Architect—Gibbs & Cox Inc.
Launched—Feb. 16, '34; **Comp.** Apr. 25, '34
Sister Ship—MANUELA; Launched, March 16, 1934; completed, May 30, 1934
Classification—American Bureau of Shipping

HULL PARTICULARS

Length over all, 410 feet, 9 inches; Length between perpendiculars, 390 feet; breadth molded, 55 feet; depth molded, 30 feet, 6 inches; draft loaded, 24 feet, 4¾ inches; displacement loaded, 10,525 tons; gross tonnage, 4800; net tonnage, 3000; passenger capacity, cabin, 12; cargo capacity, cubic feet, 396,000; bunker fuel oil capacity in tons, 500; speed, 13 knots.

MACHINERY PARTICULARS

Main Engine—One set, impulse type, double reduction geared turbines with one high pressure and one low pressure turbine, built by the Newport News Shipbuilding & Dry Dock Co. Brake horsepower 3150, developed at 90 revolutions per minute of the propeller. Fuel consumption, 0.8 pound per shaft horsepower per hour.

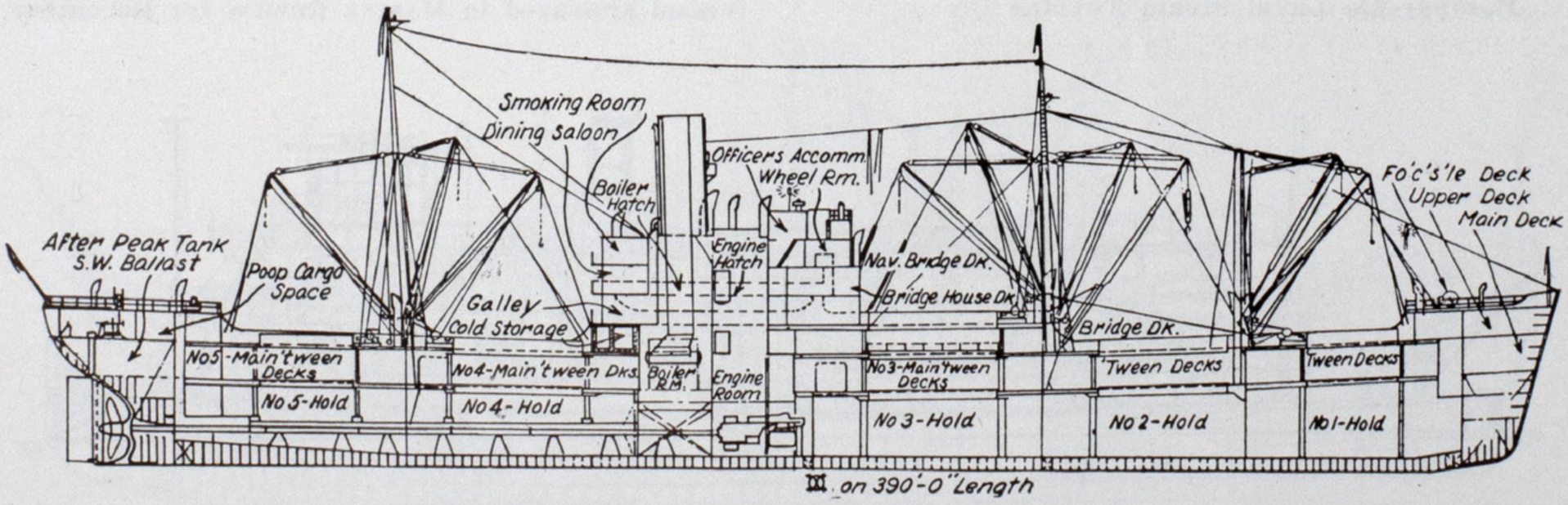
Boilers—Two, Babcock & Wilcox watertube marine boilers with a total heating surface of 7884 square feet and a total of 3200 square feet of superheating surface. Working pressure, 300 pounds per square inch. Superheat, 125 degrees Fahr. Superheaters and desuperheaters also supplied by Babcock & Wilcox Co. Oil burning equipment supplied by Todd. Soot blowers, Diamond Power Specialty Corp.

Generating Sets—Three, reciprocating steam engine drive, 15 kilowatts each, built by Troy Engine & Machine Co.

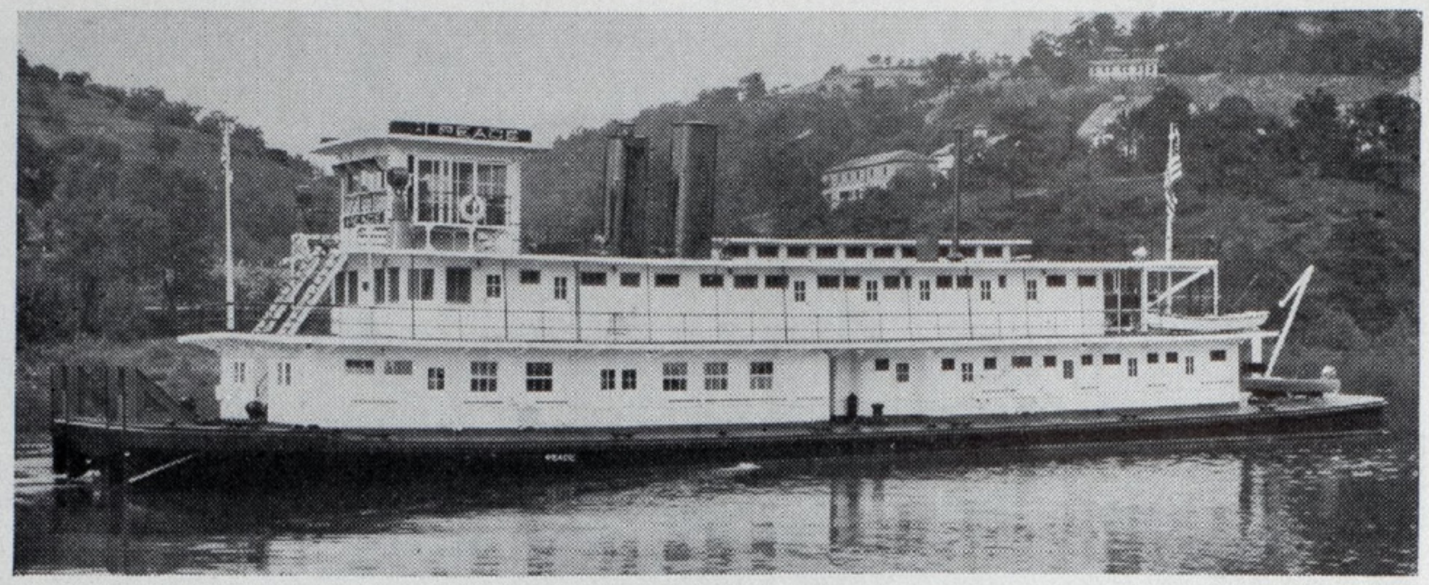
AUXILIARY EQUIPMENT

Pumps—Warren Steam Pump Co. Inc.
Windlass—Hyde Windlass Co.
Winches—Lidgerwood Mfg. Co.
Steering Engine—Hyde Windlass Co.
Propellers—Newport News S. B. & D. D. Co.
Refrigeration—Carrier-Brunswick Int. Inc.
Lifeboats, Davits—Welin Davit & Boat Corp.
Radio Equip.—Mackay Radio Telegraph Co.
Engine (for circulating pump)—Troy
Oil Purifiers—The Sharples Specialty Co.
Air Compressor—Westinghouse Air Brake Co.
Thrust Bearing—Kingsbury Machine Works
Recorders (CO_2)—The Permutit Co.
Feed Water Heaters—Griscom-Russell Co.
Oil Coolers—Griscom-Russell Co.
Drainers—Cochrane Corp.
Flooring—Selby, Battersby & Co.
Plywood—United States Plywood Co. Inc.
Clocks—Chelsea Clock Co.
Galley Range—The Stamford Foundry Co.

The ANGELINA and MANUELA were described in an article in the June, 1934 MARINE REVIEW.



PEACE—Towboat—Rivers—Twin Screw—Diesel



Name—PEACE
Owner—Union Barge Line Corp., Pittsburgh
Builder—The Dravo Contracting Co.
Naval Architect—The Dravo Contracting Co.
Launched—Aug. 14, '34; **Comp.** Oct. '34
Classification—American Bureau of Shipping

HULL PARTICULARS

Length over all, 161 feet; length between perpendiculars, 160 feet; breadth molded, 34 feet; depth molded, 7 feet, 9 inches; draft, 5 feet, 6 inches; displacement loaded, 560 tons; gross tonnage, 635; net tonnage, 560; bunker diesel fuel capacity, in tons, 75; speed, 10½ statute miles.

MACHINERY PARTICULARS

Main Engines — Two, 4-cycle, 6-cylinder, single acting, solid injection, direct reversible, marine diesel engines of 14-inch bore and 18-inch stroke; built by Winton Engine Corp. Each engine develops 375 brake horsepower at 250 revolutions per minute, making a total of 750 b.h.p. Each engine is direct connected to a manganese bronze propeller, 5 feet, 5 inches in diameter and 4 feet, 8 inches in effective pitch, operating in partial tunnels.

Auxiliary Generators — Two, 3-cylinder, 4-cycle, 8 x 10 inches Winton diesel engines, each driving a 50-kilowatt electric generator.

AUXILIARY EQUIPMENT

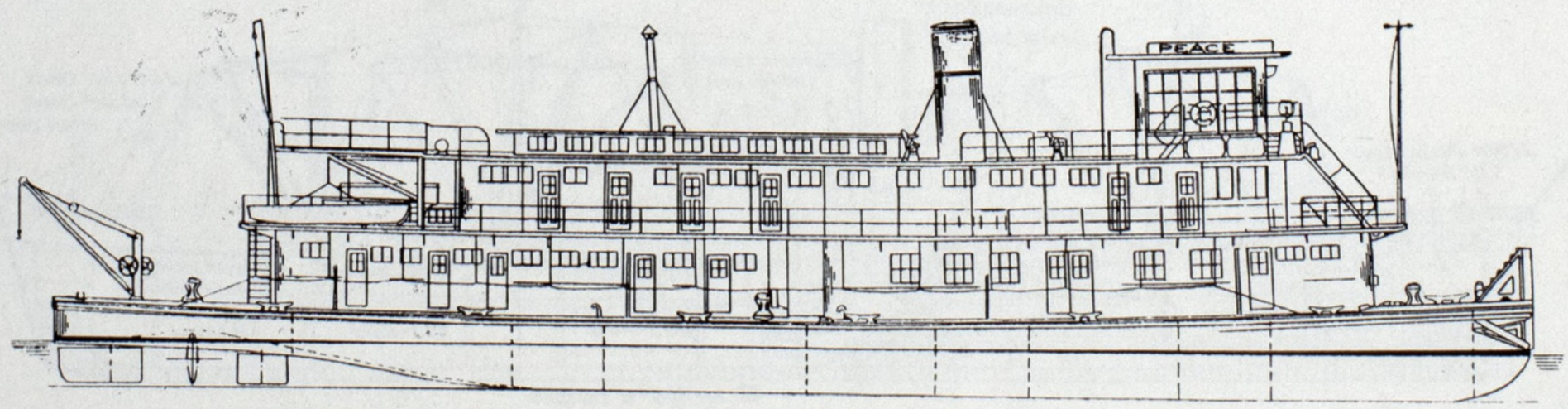
Pumps—De Laval Steam Turbine Co.
Capstans—The Dravo Contracting Co.
Steering Engine—The Dravo Contracting Co.
Propellers—Cramp Brass & Iron Foundries
Refrigeration—Carrier-Brunswick Int. Inc.
Heating Boiler—Erie City Iron Works
Oil Burners—Viking Mfg. Co.
Oil Purifiers—The De Laval Separator Co.
Engine Telegraphs—The Kirk, Habicht Co.
Hardware—The Dayton Mfg. Co.
Gears (for capstans)—De Laval
Wrought Iron Pipe—A. M. Byers Co.
Thrust Bearings—Kingsbury Machine Works
Oil Cooler—C. H. Wheeler Mfg. Co.
Water Filter—Cochrane Corp.
Steel Flooring, Treads—Tri-Lok Co.
Water Heater—Griscom-Russell Co.
Evaporating Set—Griscom-Russell Co.
Clocks—Chelsea Clock Co.
Signal Telegraphs—Chas. Cory Corp.

DESCRIPTION

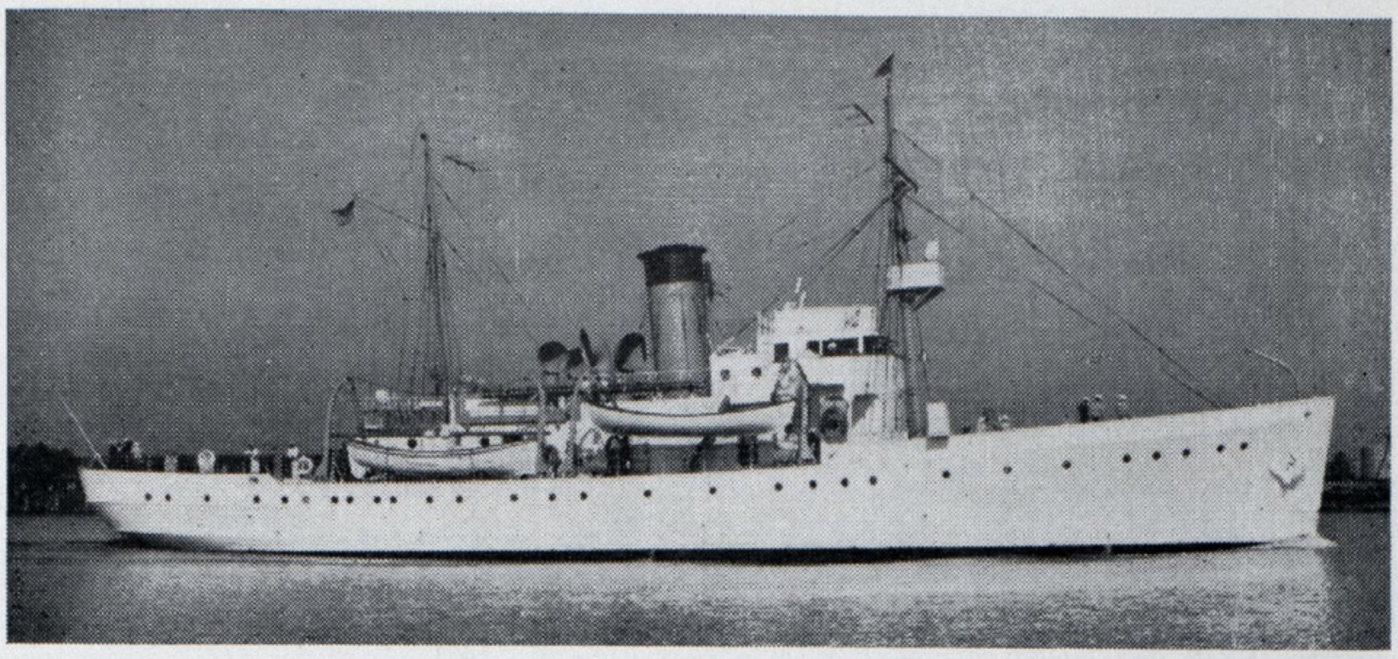
The stern is partially tunnelled to give solid water for the propellers. Without tow she has logged 12 miles per hour. The all-steel hull is shipshape with modeled bow and easy sweeping stern lines. Operating draft is 5 feet, 6 inches.

REMARKS

One of the unique features of this twin screw, tunnel stern, river towboat is the placing of the struts, supporting the propeller shafts, in a position aft of propellers. The shafts extending through the propellers are supported in roller bearings protected from the water by packing. By this means overhanging weights are eliminated and the long length of exposed propeller shaft is steadied. To minimize resistance the arms of the struts are streamlined and are set at an angle to the centerline of the shaft. A complete illustrated article on this interesting vessel appeared in MARINE REVIEW for December,



ONONDAGA—Coast Guard Cutter—Single Screw—Turbine



DESCRIPTION

The ONONDAGA and sistership TAHOMA, except for machinery and some other minor features, are similar to the ALGONQUIN and class, also described in this section. The ONONDAGA is based on Astoria, Oreg., while the TAHOMA is based on Cleveland for year round service on Lake Erie.

Name—ONONDAGA
Owner—United States Coast Guard
Builder—Defoe Boat & Motor Works
Naval Architect—United States Coast Guard
Launched—Aug. 2, '34; **Comp.**, Sept. 11, '34
Sister Ship—TAHOMA. Launched, Sept. 5, 1934; completed, Oct. 20, 1934.

HULL PARTICULARS

Length overall, 165 feet; length between perpendiculars, 150 feet; breadth molded 36 feet; depth molded, 21 feet; draft designed, mean, 12 feet; maximum, 13 feet; displacement loaded, 1000 tons; bunker fuel oil capacity, in tons, 140; in gallons, 42,000; speed, 13 knots.

MACHINERY PARTICULARS

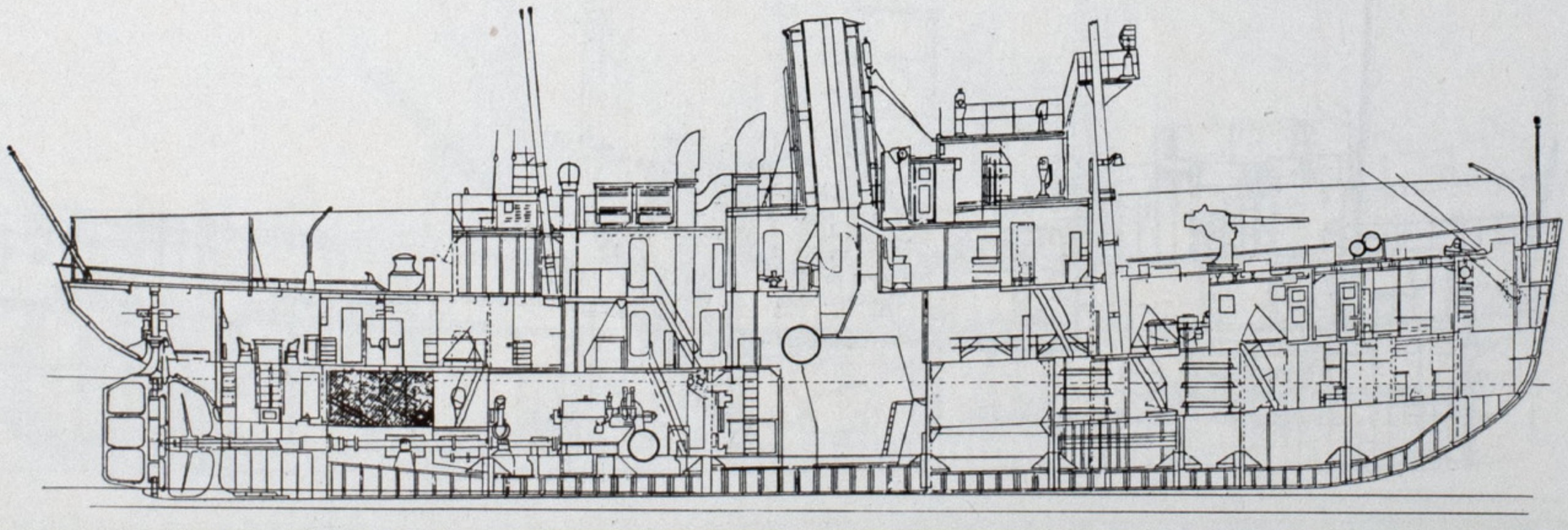
Main Engine—One, steam turbine, double reduction geared unit, built by The De Laval Steam Turbine Co. Size, 1500 shaft horsepower, at 7500 revolutions per minute of the turbine and at 140 revolutions per minute of the propeller. The turbine operates on steam at 300 pounds per square inch pressure and 200 degrees Fahr. superheat, with 27½-inch vacuum.

Boilers—Two, watertube marine boilers with interdeck superheaters, built by The Babcock & Wilcox Co. Size, 4926 square feet of total heating surface in the two boilers. Working pressure, 310 pounds per square inch and 200 degrees Fahr. superheat. Desuperheaters, feed water regulators and oil burning equipment also supplied by The Babcock & Wilcox Co. Soot blowers, Diamond Power Specialty Corp.

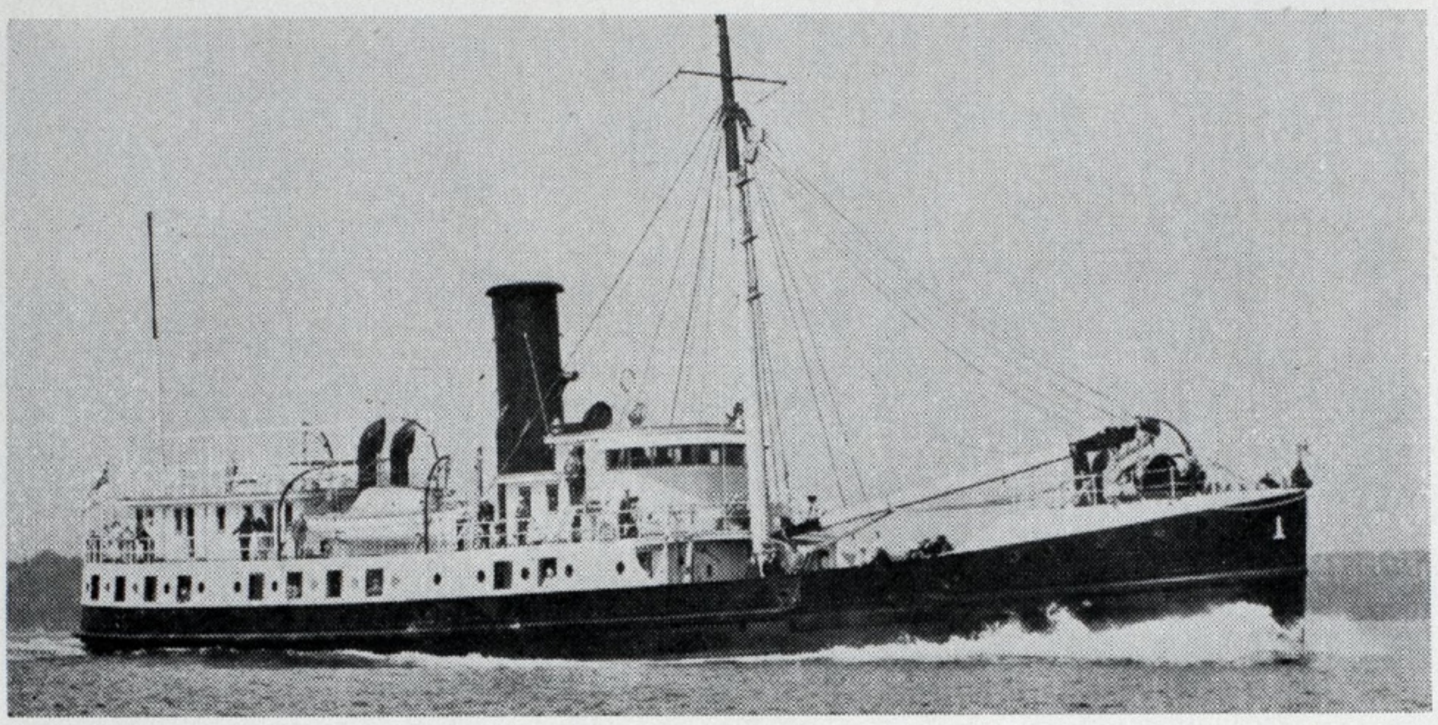
Auxiliary Generators—Two, turbine driven, De Laval generating units, each of 35-kilowatt capacity.

AUXILIARY EQUIPMENT

Pumps—Warren; De Laval; Northern
Windlass, Capstan—Lidgerwood Mfg. Co.
Steering Engine—Lidgerwood Mfg. Co.
Propellers—F. Ferguson & Son Co.
Refrigeration—Kelvinator Co.
Thrust Bearing—Kingsbury Machine Works
Electric Motors—Diehl Mfg. Co.
Gyro Compass, Searchlights—Sperry
Windows—Kearfott Engineering Co. Inc.
Air Compressor—Westinghouse Air Brake Co.
Compass—Kelvin & Wilfrid O. White
Anchors, Chain—Baldt Anchor, Chain & Forge
Wrought Iron Pipe—A. M. Byers Co.
Stern Bearing—Rubber, B. F. Goodrich Co.
Oil Purifier—The De Laval Separator Co.
Fathometer—Submarine Signal Co.
Bells, Voice Tubes—Kirk, Habicht Co.
Galley Range—Ingle Mfg. Co.
Turbine Ventilators—The Allen Corp.
Valves, Eductors—Schutte & Koerting Co.
Telegraphs—Chas. Cory Corp.



HEMLOCK—Lighthouse Tender—Bays—Twin Screw—Steam



Name—HEMLOCK
Owner—United States Bureau Lighthouses
Builder—Berg Shipbuilding Co.
Naval Architect—Bureau of Lighthouses
Launched—Jan. 20, '34; **Comp.** July 5, '34
Classification—Lighthouse Service

HULL PARTICULARS

Length over all, 174 feet, 6½ inches; length between perpendiculars, 163 feet, 6 inches; breadth molded, 32 feet; depth molded, 14 feet, 6 inches; draft, 10 feet, 7 inches; displacement on this draft, 770 tons; bunker fuel capacity in tons, 103; cruising radius, 2000 miles; speed, 13½ statute miles per hour.

MACHINERY PARTICULARS

Main Engines—Two, triple expansion, vertical inverted, reciprocating steam engines, each of 500 indicated horsepower at 150 revolutions per minute; built by Washington Iron Works. Size of engines 12 x 19 x 32 inches by 24 inches stroke. Each engine drives a 4-bladed propeller, 7 feet, 3 inches in diameter and 10 feet, 9 inches in pitch.

Boilers—Two Foster Wheeler, watertube marine boilers with a total heating surface in the two boilers of 5028 square feet; maximum working pressure, 325 pounds; fuel, oil; oil burners of Mayflower type, supplied by The Babcock & Wilcox Co.

Auxiliary Generators—Two, 7½ k.w. steam engine drive, Troy Engine & Machine Co.

AUXILIARY EQUIPMENT

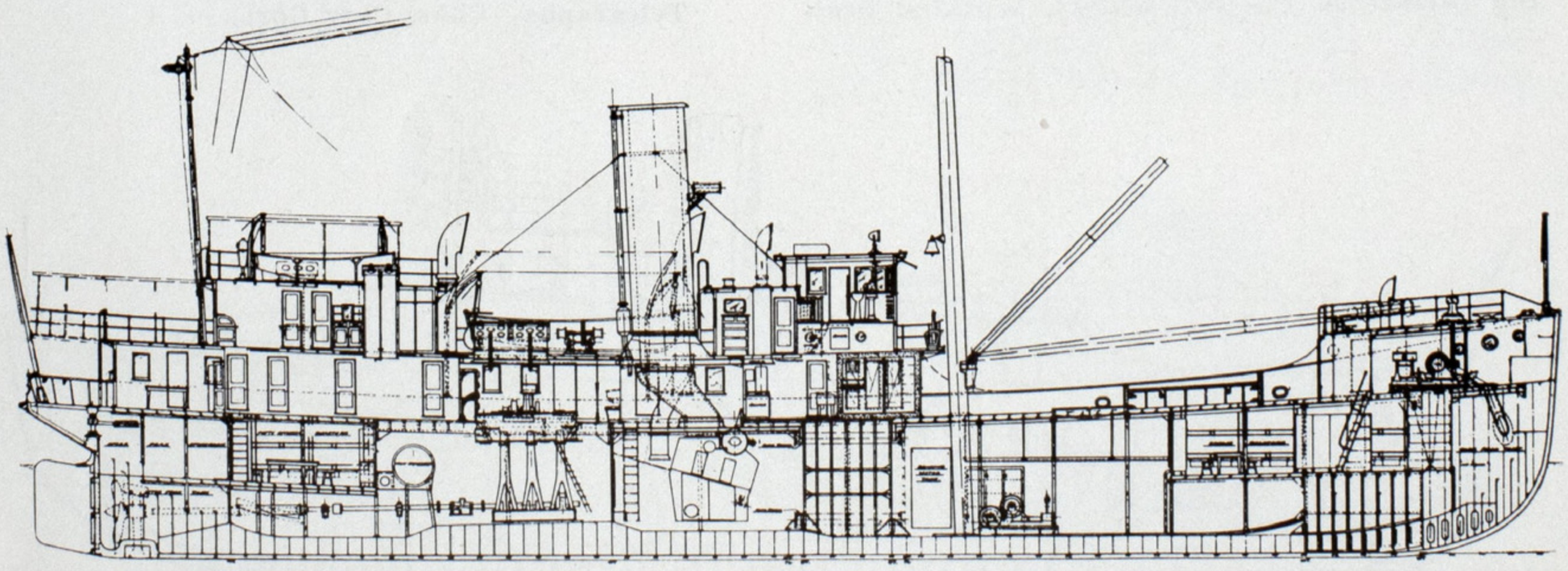
Pumps—Worthington Pump & Mach. Corp.
Windlass—Allan Cunningham
Winches—Allan Cunningham
Steering Engine—Allan Cunningham
Refrigeration—Frigidaire Co.
Fathometer—Submarine Signal Co.
Engine Telegraphs—The Kirk Habicht Co.
Copper Convectors—Chase Brass & Copper Co.
Engine (for pump drive)—Troy
Galley Range—The Stamford Foundry Co.
Iron Piping (wrought)—A. M. Byers Co.
Gyro Compass—Sperry Gyroscope Co. Inc.
Searchlights—Sperry Gyroscope Co. Inc.
Thrust Bearings—Kingsbury Machine Works
Fire Exting. Equip.—C-O-Two Fire Equip. Co.

DESCRIPTION

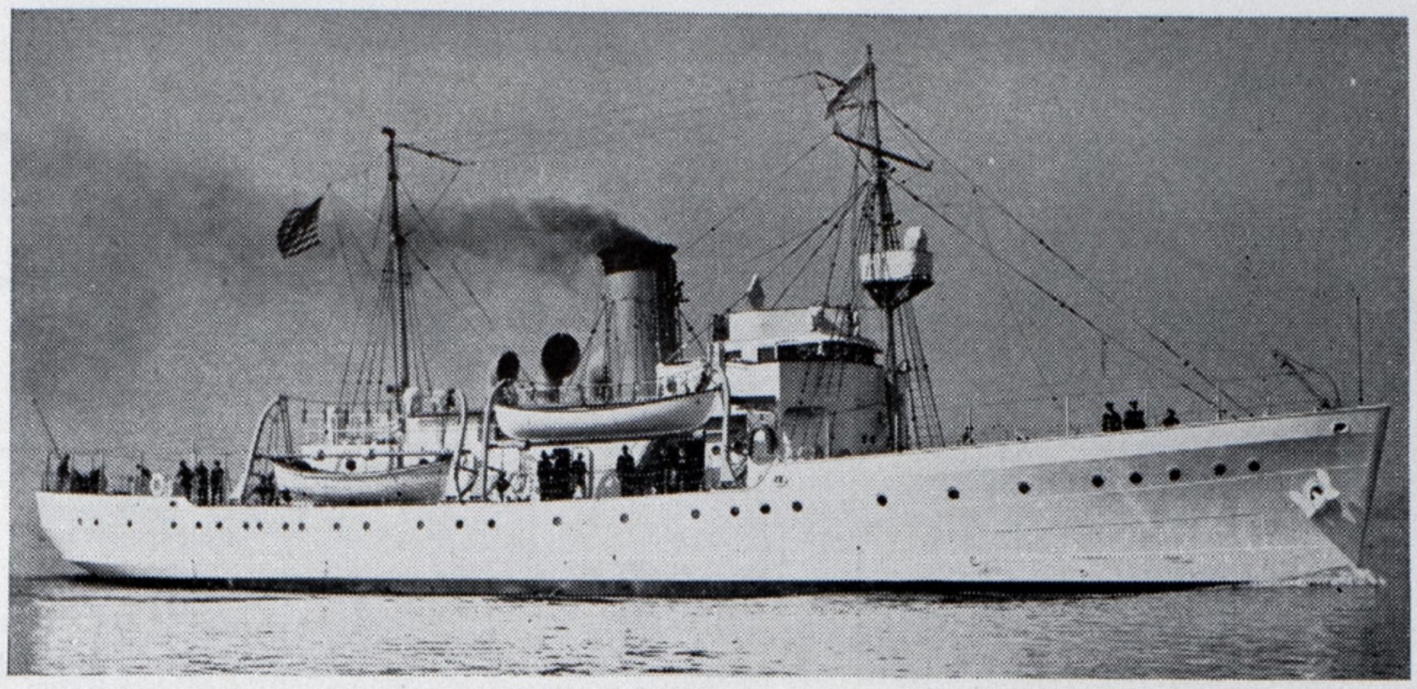
A lighthouse tender of standard type, now in service tending to lights and buoys in the sixteenth lighthouse district, which embraces the waters of Alaska. Propelled by twin screws, steam reciprocating engines, giving a speed of 12 knots.

REMARKS

The cost of this vessel completely equipped is about $240,000 and the bid price for her construction was $228,480. She is the second of her type to be built and is similar to the ARBUTUS, completed by The Pusey & Jones Corp., in the summer of 1933. Equipment for handling buoys and heavy material in the servicing of lights include a derrick mast and a 50-foot boom served by a hoister capable of dealing with weights up to 20 tons.



ALGONQUIN—Coast Guard Cutter—Single Screw—Turbine



DESCRIPTION

Known as cruising cutters, this vessel and sisterships are of extremely sturdy construction, the lower hull plating being ⅞-inch. Designed to stay at sea in any weather and for making rescues under the most difficult conditions, also for breaking ice in rivers, harbors and lakes.

Name—ALGONQUIN
Owner—United States Coast Guard
Builder—The Pusey & Jones Corp.
Naval Architect—United States Coast Guard
Launched—July 25, 34; **Comp.**, Oct. 20, '34
Sister Ships — COMANCHE and MOHAWK. Launched respectively, Sept. 6, 1934 and Oct. 23, 1934. Completed respectively, Dec. 1, 1934, and Jan. 19, 1935.

HULL PARTICULARS

Length overall, 165 feet; length between perpendiculars, 150 feet; breadth molded, 36 feet; depth molded, 21 feet; draft designed, mean, 12 feet; maximum 13 feet; displacement loaded, about 960 tons; complement, 6 officers,

MACHINERY PARTICULARS

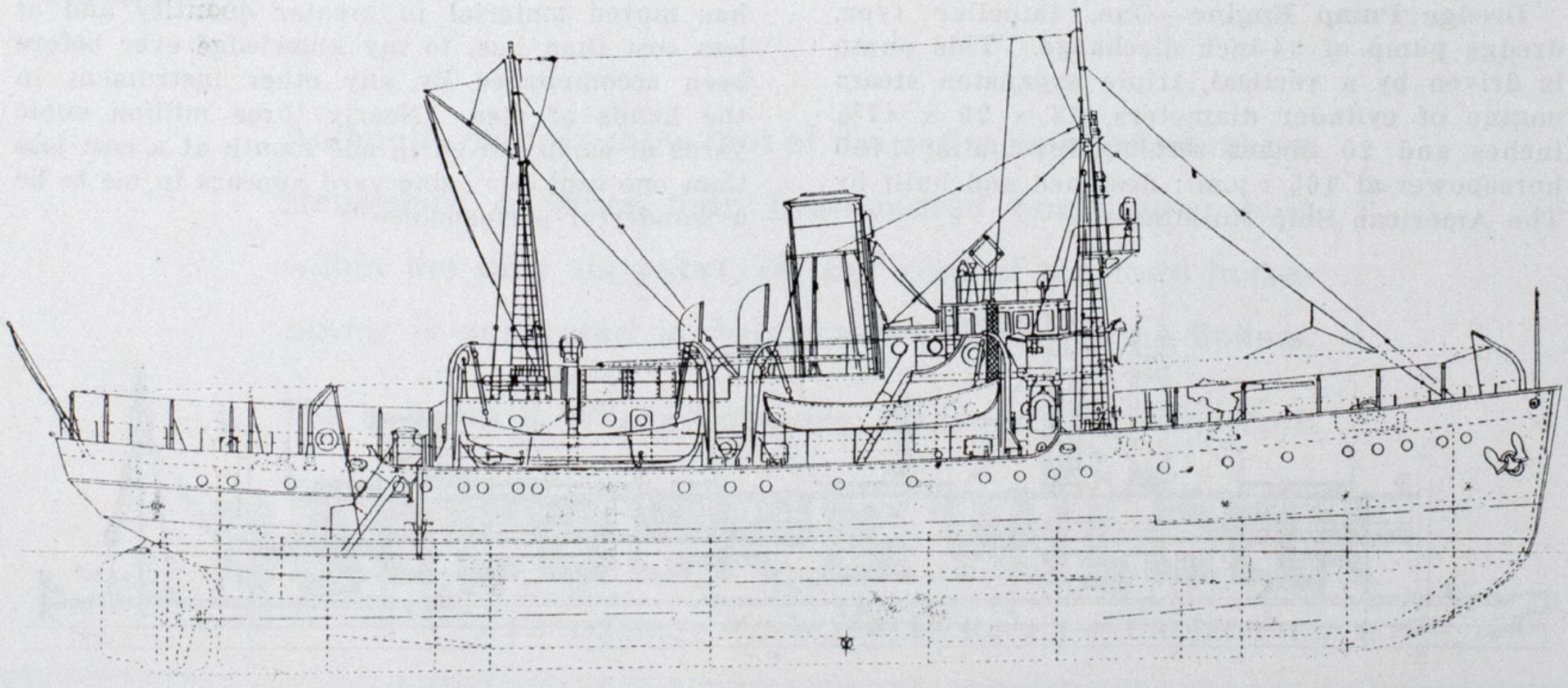
Main Engine—One, impulse type steam turbine, double reduction geared, built by Westinghouse Electric & Mfg. Co. Size, 1500 shaft horsepower at 140 revolutions per minute of the propeller. The turbine operates on steam at 300 pounds pressure and 200 degrees Fahr. superheat, with 27½-inch vacuum.

Boilers—Two, watertube marine boilers of cross drum, straight tube, forged steel sectional header type, built by Foster Wheeler Corp. Size, each, 2450 square feet of heating surface. Designed to operate at 310 pounds per square inch and 200 degrees Fahr. superheat. Boilers oil-fired, using Todd burners, Griscom-Russell heaters and Dravo-Doyle Co. pumps. Soot blowers, Diamond Power Specialty Corp.

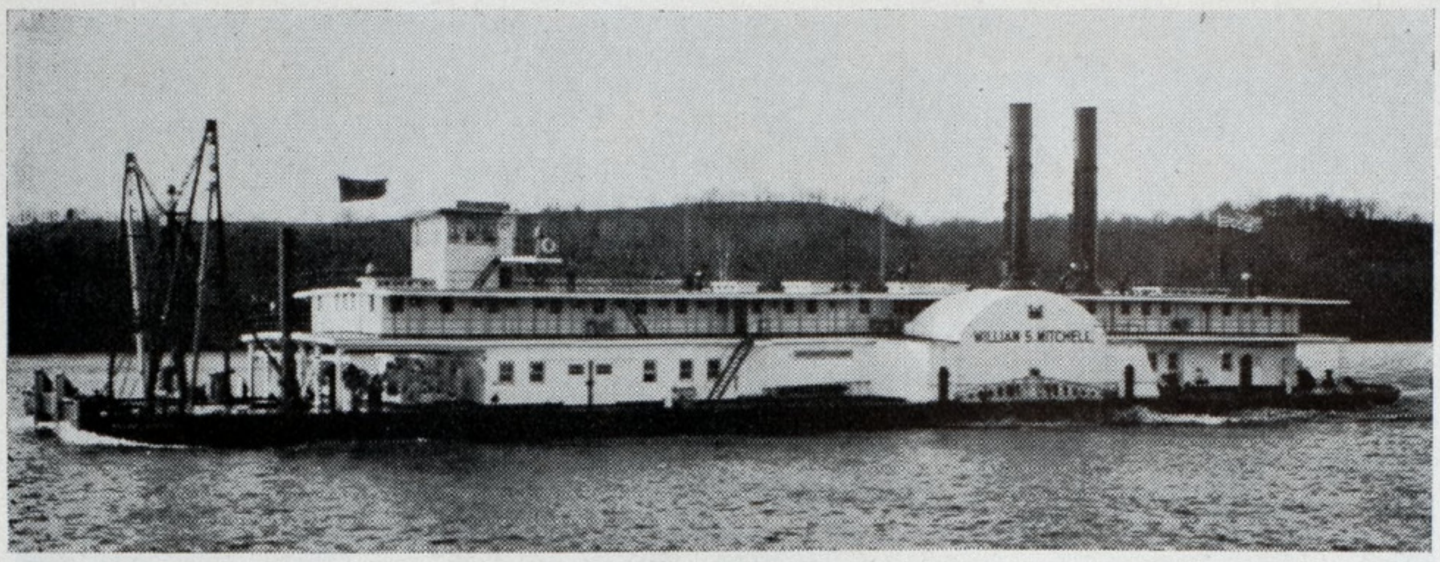
Auxiliary Generators—Two, turbine driven, Westinghouse Electric each of 35 kilowatts.

AUXILIARY EQUIPMENT

Pumps—Warren; Westco; Northern; others
Windlass, Gypseys—Lidgerwood Mfg. Co.
Propellers—F. Ferguson & Son
Thrust Bearings—Kingsbury Machine Works
Oil Purifier—The De Laval Separator Co.
Gyro Compass, Searchlights—Sperry
Compass—Kelvin & Wilfrid O. White Co.
Ventilators (turbine)—The Allen Corp.
Air Compressor—Westinghouse Air Brake Co.
Fathometer—Submarine Signal Co.
Davits—Welin Davit & Boat Corp.
Clocks—Chelsea Clock Co.
Windows—Kearfott Engineering Co. Inc.
Flooring, Fire Hose—Selby, Battersby & Co.
Valves, etc.—Schutte & Koerting Co.
Iron Pipe—A. M. Byers Co.
Hull Plates—Central Iron & Steel Co.
Stern Bearings—Rubber, B. F. Goodrich Co.



WILLIAM S. MITCHELL—Dredge—Rivers—Sidewheel—Steam



Name—WILLIAM S. MITCHELL
Owner—United States Engineers
Builder—Marietta Mfg. Co.
Naval Architect—United States Engineers
Launched—Oct. 3, '34; **Comp.** Dec. 10, '34
Sister Vessel—William M. Black. Launched Sept. 1, 1934; completed, Nov. 16, 1934

HULL PARTICULARS

Length over all, 277 feet; ½-inch; length between perpendiculars, 270 feet; breadth over all, 84 feet, 8⅜ inches; breadth molded, 50 feet; depth molded, 8 feet, 6 inches; draft, loaded, 4 feet, 4 inches; draft light, 4 feet, 1 inch; displacement loaded, 1462 tons; crew accommodations for 64; bunker fuel oil capacity, 246 tons; speed, 9.8 statute miles per hour.

MACHINERY PARTICULARS

Main Engines—Two, tandem compound, reciprocating steam engines; cylinder diameters, 20 and 40 inches; stroke, 84 inches; total horsepower at 24 r.p.m., 1600. Built by Marietta Mfg. Co.

Boilers—Two, Babcock & Wilcox, watertube, marine boilers, with a total heating surface in the two of 11,174 square feet. Working pressure, 250 pounds per square inch; two Babcock & Wilcox superheaters with 50 degrees Fahr. superheat at the outlets. The boilers are oil fired, with Babcock & Wilcox oil burners. Soot blowers, Diamond Power Specialty Corp.

Dredge Pump Engine—One, impellar type, dredge pump of 34-inch discharge. This pump is driven by a vertical, triple expansion steam engine of cylinder diameters, 18 x 29 x 47½ inches and 20 inches stroke, developing 1400 horsepower at 165 r.p.m.; designed and built by The American Ship Building Co.

Generator Sets—Two, Westinghouse, direct current, each of 20 kilowatts, direct connected to a 33-horsepower De Laval steam turbine.

AUXILIARY EQUIPMENT

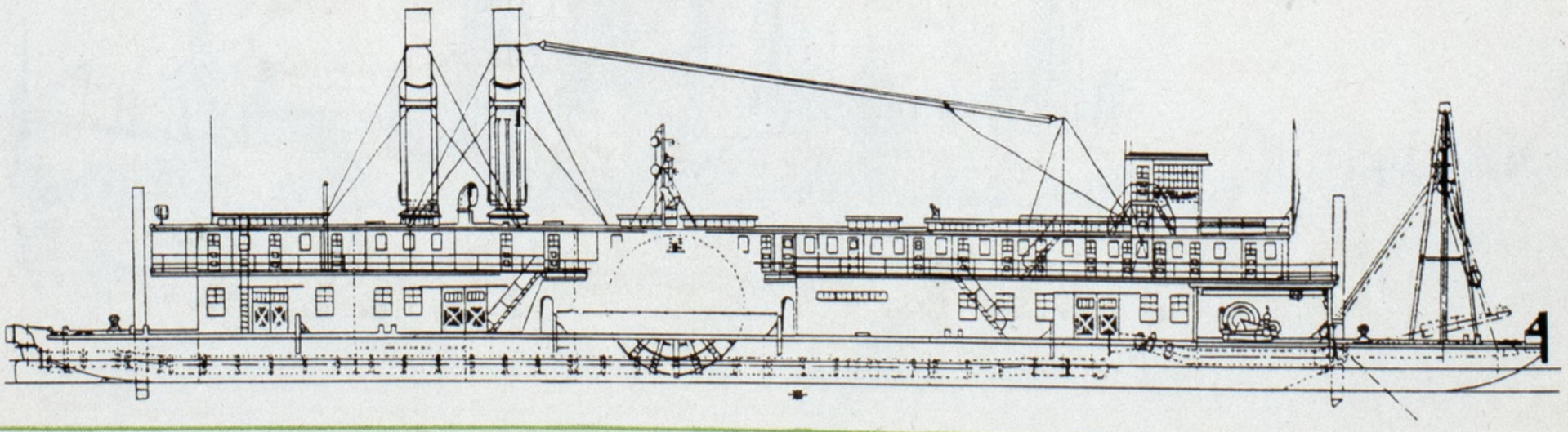
Pumps—Worthington; Warren; Elliot
Windlass (anchor)—Allan Cunningham
Winches (spud & ladder)—Lidgerwood
Winches (hauling)—Clyde Sales Co.
Steering Gear, Hydraulic—Marietta Mfg. Co.
Capstans (steam)—Marietta Mfg. Co.
Refrigeration—Baker Ice Machine Co.
Engine Telegraphs—The Kirk, Habicht Co.
Galley Range—Elisha Webb & Son Co.
Engines (Two for pump drive)—**Troy**
CO_2 Recorder—The Permutit Co.
Injectors, Exhausters—Schutte & Koerting
Fire Exting. Equip.—C-O-Two Fire Equip.
Feed Water Heater—Griscom-Russell Co.
Feed Water Filter—Griscom-Russell Co.

REMARKS

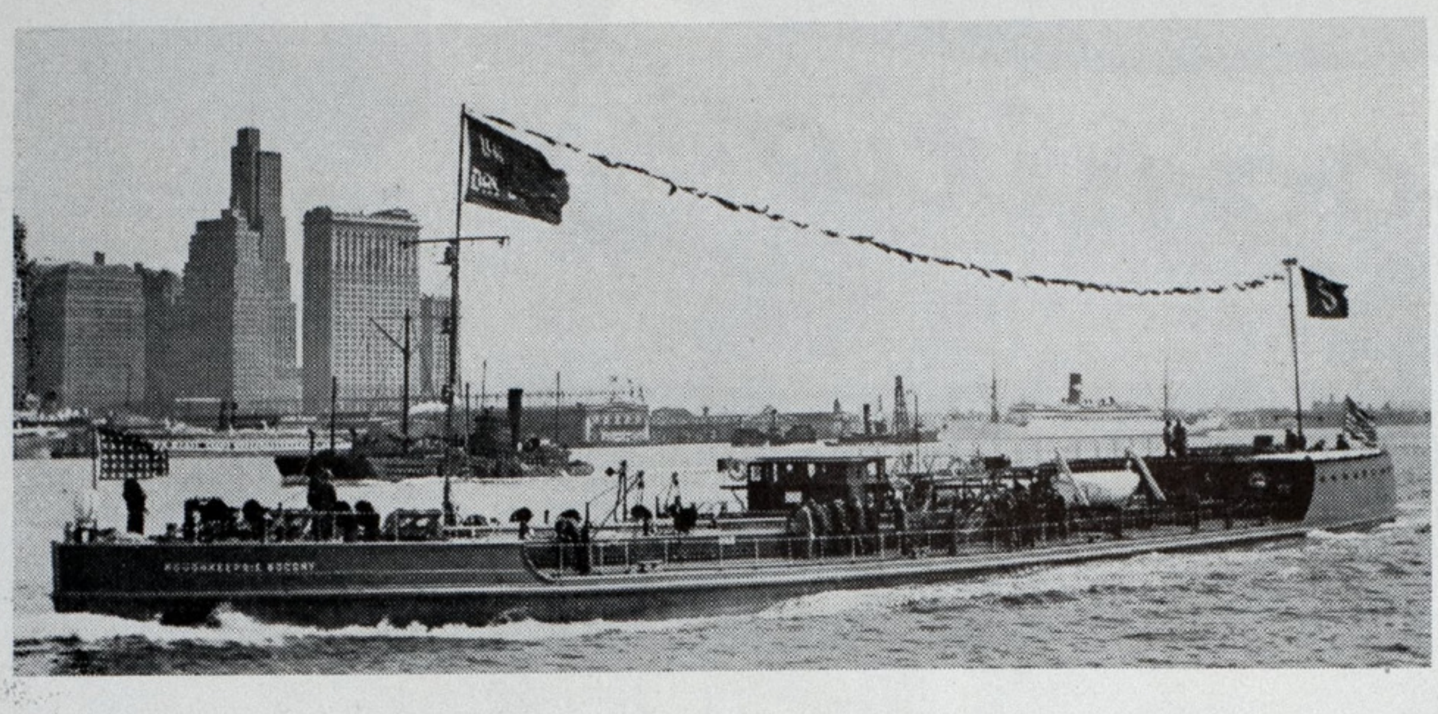
These self-propelled dredges are of the dustpan type with suction head, and 34-inch diameter discharge. The entire hull and framing of the superstructure is of steel construction

The remarkable dredging capacity of these pumps was noted in a statement by Major General Lytle Brown, then chief of engineers, to Capt. Clarence Friemonth of the similar dredge CAPT. WILLIAM CLARK, relative to its output:

"Recently this dredge, under your command, has moved material in greater quantity and at less cost than has, to my knowledge ever before been accomplished by any other instrument in the hands of men. Nearly three million cubic yards of earth moved in one month at a cost less than one cent per cubic yard appears to me to be a wonderful performance."



POUGHKEEPSIE SOCONY—Tanker—Canals—Twin Screw—Diesel



Name—POUGHKEEPSIE SOCONY
Owner—Socony-Vacuum Oil Co.
Builder—United Dry Docks Inc.
Naval Architect—N. J. Pluymert
Launched—Aug. 3, '34; **Comp.** Aug. 28, '34
Sister Ships NEW HAVEN SOCONY, and PLATTSBURGH SOCONY. Launched respectively, June 1, and June 29, 1934. Completed respectively, July 18 and Aug. 2, 1934.
Classification—American Bureau of Shipping

HULL PARTICULARS

Length over all, 260 feet; length between perpendiculars, 252 feet; breadth molded, 40 feet; depth molded, 14 feet; draft, light 4 feet, 1½ inches; draft, loaded, 12 feet; displacement loaded, 2755 tons; gross tonnage, 1243; net tonnage, 779; deadweight, 1930 tons; cargo capacity, in cubic feet, 95,325; speed, 10 statute miles per hour.

MACHINERY PARTICULARS

Main Engines—Two, 4-cycle, 6-cylinder, air injection, diesel engines, built by McIntosh & Seymour Corp. Size, 13-inch bore by 18-inch stroke; each engine developing 375 brake horsepower at 265 revolutions per minute.

Auxiliary Generators—Two, 60 k.w. each direct current, 120 volts built by Diehl Mfg. Co. Each generator driven by one direct connected McIntosh & Seymour 3-cylinder, 4-cycle, solid injection diesel engine developing 90 brake horsepower at 450 r.p.m. Size of cylinders 9½ x 10½ inches.

DESCRIPTION

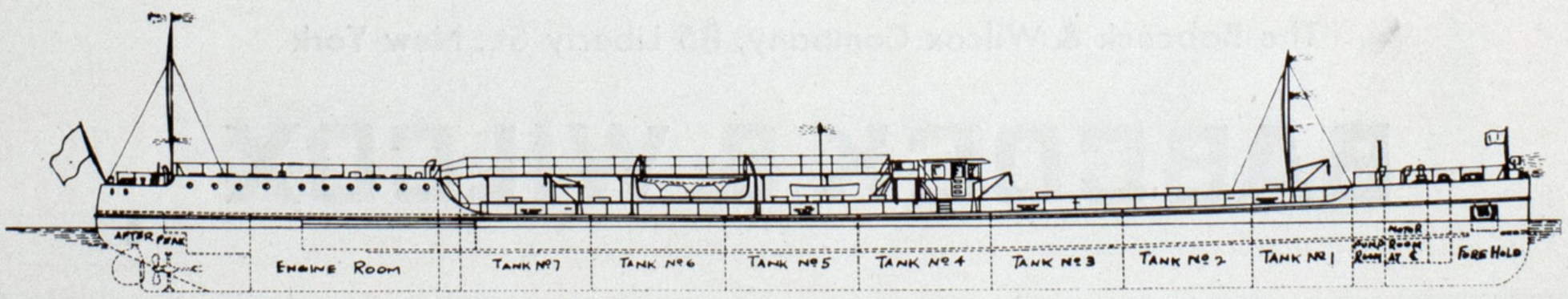
Of all-welded construction, this vessel weighs 50 tons less than her identical sisterships, of riveted construction. Said to be the largest all-welded merchant vessel to be built in the United States. For service coastwise and through the New York State Barge canal.

AUXILIARY EQUIPMENT

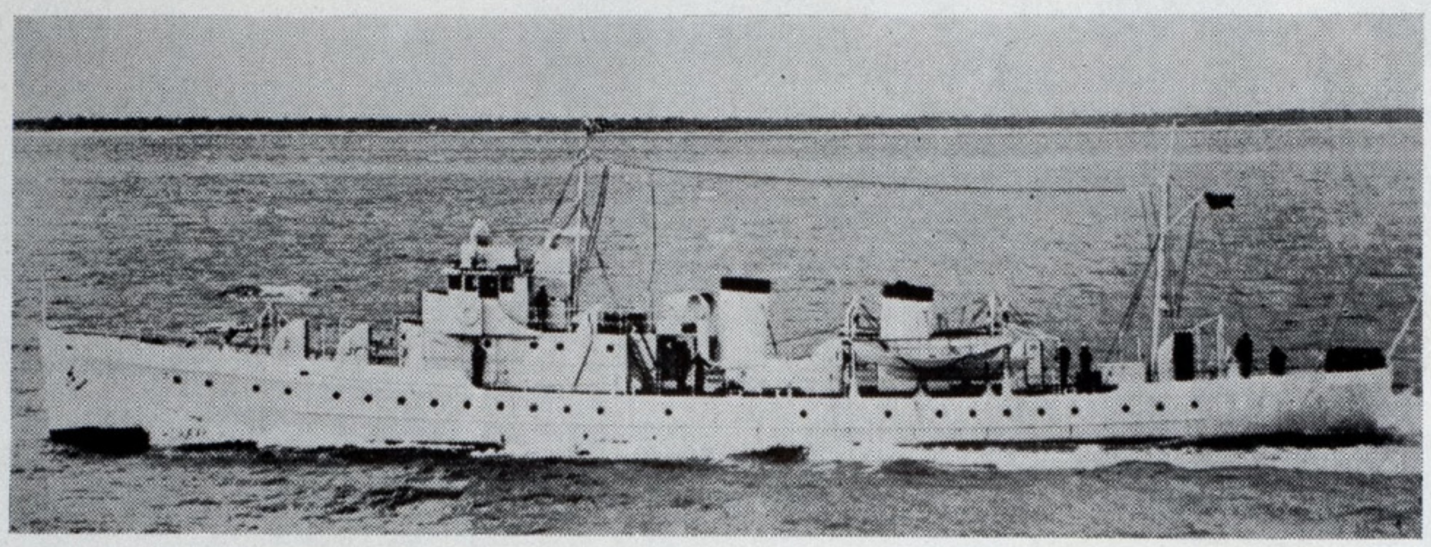
Pumps—Northern Pump Co.
Air Compressor—Worthington
Windlass—American Engineering Co.
Gypsy—American Engineering Co.
Steering Engine—American Engineering Co.
Propellers—United Dry Docks Inc.
Refrigeration—Frigidaire Co.
Oil Heating Equipment—York
Anchor Chain—National Malleable & S. C.
Davits, Lifeboats—Welin Davit & Boat Corp.
Thrust Bearings—Kingsbury Machine Works
Wrought Iron Pipe—A. M. Byers Co.
Storage Batteries—Thomas A. Edison Inc.
Hull Plates—Central Iron & Steel Co.
Silencers—The Maxim Silencer Co.
Clocks—Chelsea Clock Co.
Telegraphs—Chas. Cory Corp.

REMARKS

The saving in weight of the all-welded hull of the POUGHKEEPSIE SOCONY over her sisterships was made possible by the elimination of 217,000 rivets and the substitution of 108,000 linear feet of electric welding and also by the use of flat bars for framing, beams and bulkhead stiffeners in the cargo spaces. The principal advantages of using flat bars is a substantial increase in corrosion resistance because of the greater thickness for equivalent section. It is believed that this will be an important advantage in prolonging the life of the cargo oil compartments, where water ballast is so frequently used.



PANDORA—Coast Guard Patrol—Twin Screw—Diesel



Name—PANDORA
Owner—United States Coast Guard
Builder—Manitowoc Shipbuilding Corp.
Naval Architect—United States Coast Guard
Launched—June 30, '34; **Comp.** Nov. 1, '34

Sister Ships—DIONE, and ELECTRA, built by Manitowoc Shipbuilding Corp., both launched June 30, 1934; completed respectively, Oct. 5, 1934 and Oct. 13, 1934.

Sister Ships—ATALANTA, ARIADNE and CYANE, built by Lake Union Dry Docks & Machine Works. Launched respectively, June 16, July 21, and Aug. 30, 1934; completed respectively, Sept. 20, Oct. 9, and Oct. 25, 1934.

Sister Ships—NIKE, NEMESIS and TRITON, built by Marietta Mfg. Co. Launched respectively, June 23, July 7, Aug. 8, 1934; completed respectively, Oct. 22, Oct. 30, Nov. 19, 1934.

HULL PARTICULARS

Length overall, 165 feet; length between perpendiculars, 160 feet; breadth molded, 25 feet, 3¾ inches; depth molded, 13 feet, 2½ inches; draft loaded, mean, 7 feet, 8 inches; maximum, 9 feet, 5½ inches; displacement loaded, 338 tons; bunker diesel fuel capacity, in tons, 26.7; cruising radius, about 2500 miles; speed, 16½ knots.

MACHINERY PARTICULARS

Main Engines—Two, 6-cylinder, 4-cycle, solid injection, reversing, diesel engines, built by the Winton Engine Corp. Size, 14-inch bore, and 16-inch stroke; 670 brake horsepower each at 450 revolutions per minute.

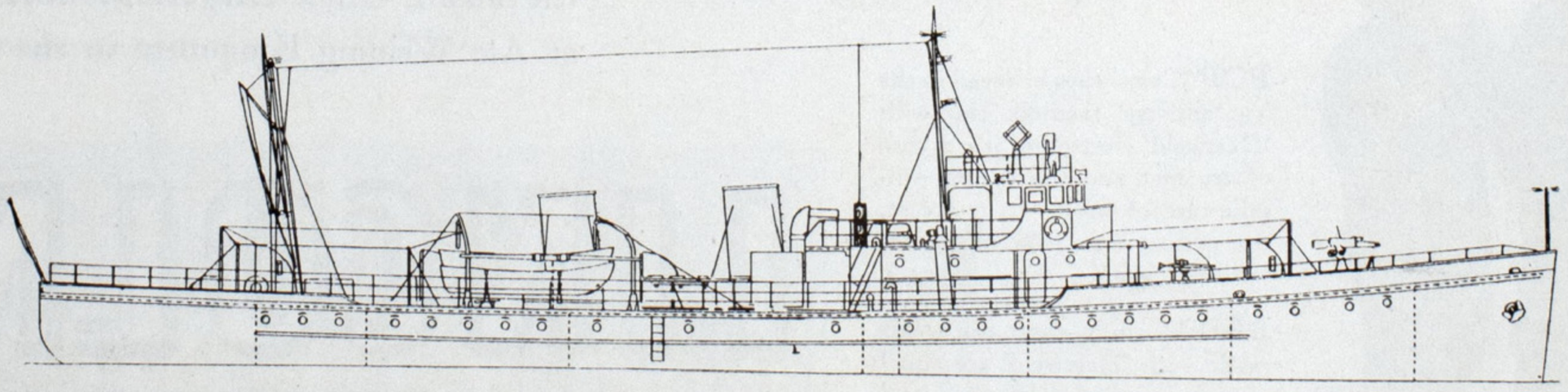
Auxiliary Power—Three, 15-kilowatt Westinghouse generators, each direct connected to a 3-cylinder, 5 x 7 inches, airless injection, Winton diesel engine, turning at 600 revolutions per minute. One emergency 5-kilowatt generating set driven by a Kohler gasoline engine.

DESCRIPTION

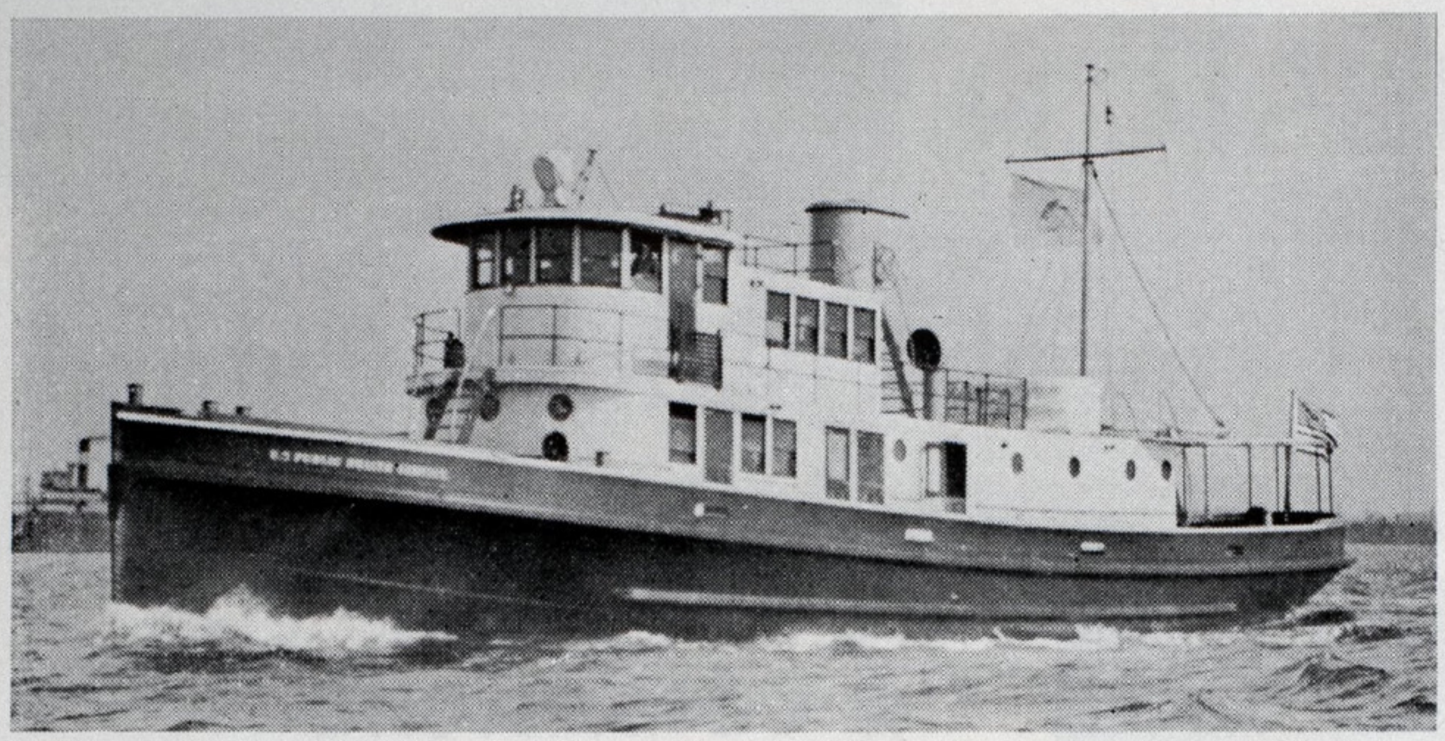
The PANDORA and eight sister vessels, all completed during 1934, were designed for off-shore patrol duty and are able sea boats. These vessels with the exception of a change in the wheelhouse and cabin are generally similar to the GALATEA described in the April, 1933 issue of MARINE

AUXILIARY EQUIPMENT

Pumps—Warren; Goulds; Winton; Westinghouse and Viking
Windlass—Allan Cunningham
Steering Engine—Sperry Gyroscope Co.
Propellers—Hyde Windlass Co.
Refrigeration—Westinghouse El. & Mfg. Co.
Heating Boiler—American Radiator Co.
Engine Telegraphs—The Kirk, Habicht Co.
Galley Range—Ingle Mfg. Co.
Hardware—The Dayton Mfg. Co.
Life Floats—Welin Davit & Boat Corp.
Anchors, Chain—Baldt Anchor, Chain & Forge
Air Compressor—Westinghouse Air Brake Co.
Air Whistles—Allan Cunningham
Eductors, Injectors—Schutte & Koerting Co.
Wrought Iron Pipe—A. M. Byers; Reading
Searchlights—Sperry Gyroscope Co. Inc.
Thrust Bearings—Kingsbury Machine Works
Windows—Kearfott Engineering Co. Inc.
Stern Bearings—Rubber, B. F. Goodrich Co.
Sleeve (Prop. Shaft)—Shenango-Penn Mold
Silencers—Engineering Specialties Co. Inc.
Signal Telegraphs—Chas. Cory Corp.



W. H. WELCH—Boarding Vessel—Single Screw—Diesel Electric



DESCRIPTION

Of unusually rugged construction, one of the outstanding features of this vessel is the use of wrought iron instead of customary mild steel for the construction of the entire hull and the superstructure as well as in the stack, the rudder, the keel and the stem.

Name— W. H. WELCH
Owner—U. S. Public Health Service
Builder—Spedden Shipbuilding Co. Inc.
Naval Architect—P. W. Clark
Launched—Aug. 8, '34; **Comp.** Nov. 23, '34
Classification—Owner's requirements

HULL PARTICULARS

Length over all, 100 feet, 8 inches; length on waterline, 92 feet, 4 inches; breadth molded, 23 feet; depth molded, 12 feet, 11 inches; draft loaded, 10 feet, 2 inches; displacement loaded, 234 tons; gross tonnage, 186.4; net tonnage, 56.1; passenger capacity, 50 or more as may be required in its service as a boarding vessel; bunker diesel fuel capacity, 2815 gallons; speed, 12.7 knots under normal machinery load.

MACHINERY PARTICULARS

Main Engines—Two, 7-cylinder, 2-cycle, solid injection, Fairbanks, Morse & Co. diesel engines. Size, cylinders 10½-inch bore and 12½-inch stroke; each engine developing 360 brake horsepower at 360 revolutions per minute. Each engine is direct connected to a generator.

Main Generators—Two, each of 205 kilowatts, direct current, Westinghouse Electric & Mfg. Co. generators, and each direct connected to one of the diesel engines described above. A 25-kilowatt exciter is attached to an extension of each generator shaft.

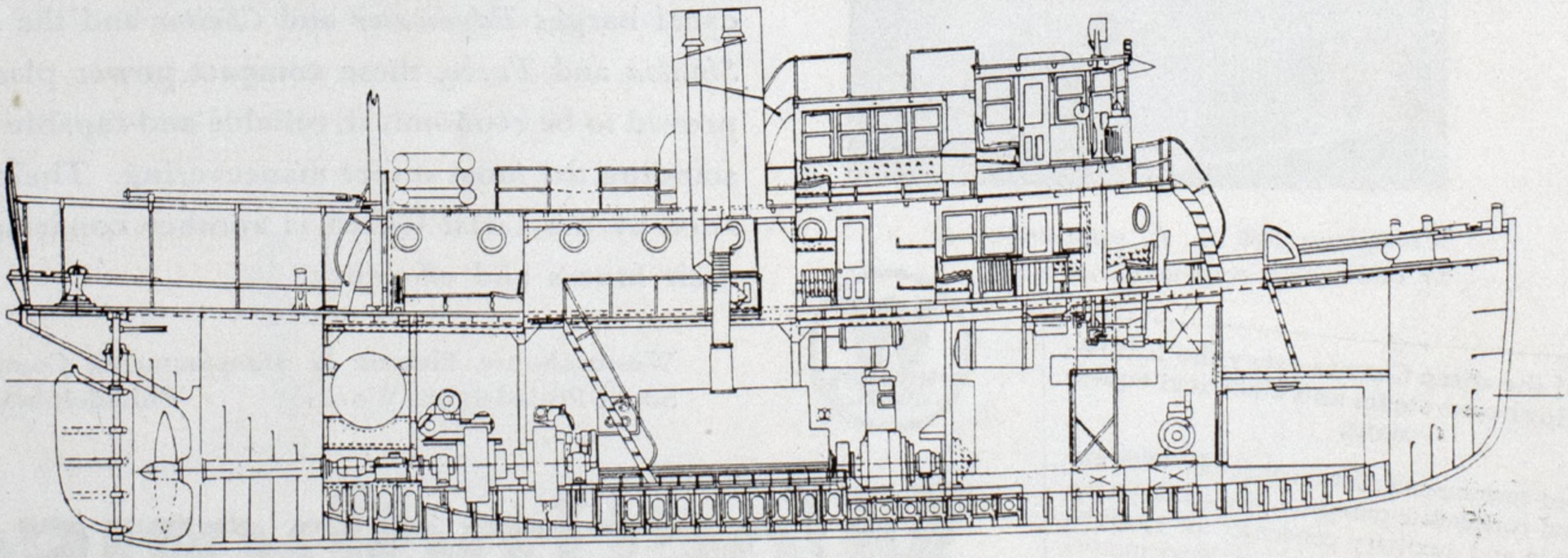
Main Propulsion Motor—One, direct current, of 500 horsepower at 250 revolutions per minute; built by Westinghouse Electric & Mfg. Co. This motor is direct connected through a Kingsbury thrust to a 3-bladed bronze propeller of 7 feet, 6 inches diameter and 5 feet, 10 inches pitch.

Auxiliary Generator—One, 20-kilowatt, direct current, Fairbanks, Morse diesel driven.

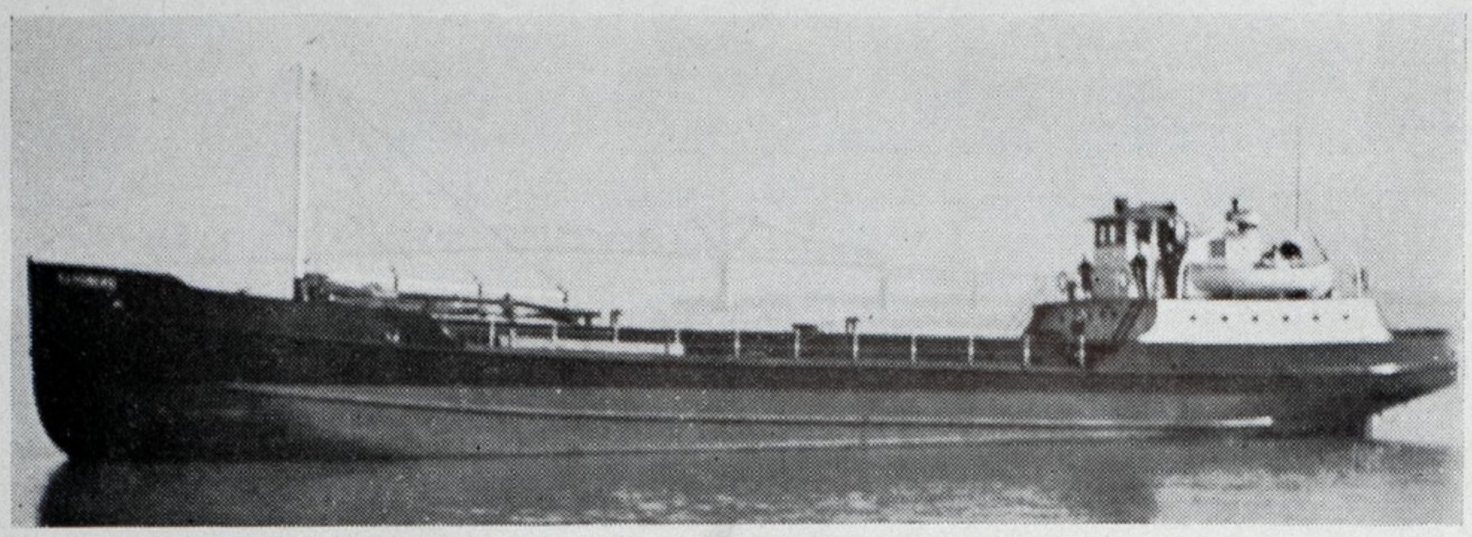
AUXILIARY EQUIPMENT

Pumps—Fairbanks,Morse & Co.
Windlass—Hyde Windlass Co.
Steering Engine—Sperry Gyroscope Co.
Searchlights—Sperry Gyroscope Co.
Propellers—Columbian Bronze Co.
Mufflers—Maxim Silencer Co.
Pyrometers—Alnor
Oil Purifiers—Goulds Pumps Inc. (Hydroil
Heating System—Crane Co.
Plumbing—Crane Co.
Life Floats—Welin Davit & Boat Corp.
Voice Tubes, Bells—The Kirk Habicht Co.
Wrought Iron Plating—A. M. Byers Co.
Thrust Bearing—Kingsbury Machine Works.
Clocks—Chelsea Clock Co.
Deck Covering—Asbestolith Mfg. Co.

On the standardization tests, which were conducted in Chesapeake bay over the measured mile off Kent island, the WELCH developed a speed of 12.4 knots at 250 revolutions.



M. A. POWERS—Tanker—Coastwise—Twin Screw—Diesel



Name—M. A. POWERS
Owner—M. A. Powers & D. H. Thurber
Builder—Charleston Dry Dock Co.
Naval Architect—L. Louis Green Jr.
Launched—Jan. 23, '35; **Comp.** Feb. 15, '35
Classification—American Bureau of Shipping

HULL PARTICULARS

Length over all, 150 feet; length between perpendiculars, 140 feet; breadth molded, 31 feet; depth molded, 11 feet; draft loaded, 8 feet, 6 inches; draft light, 7 feet aft and 6 inches forward; displacement loaded, 906 tons; gross tonnage, 492; net tonnage, 302; complement in crew, 9; cargo capacity, 676 tons; and in cubic feet, 28,075; bunker diesel fuel capacity, 17 tons; speed, 8 knots.

MACHINERY PARTICULARS

Main Engines—Two, 6-cylinder, FP6, direct reversible, diesel engines, built by The Cooper-Bessemer Corp. Size, 9-inch bore, 12-inch stroke; each engine develops 200 brake horsepower at 350 revolutions per minute.

Cargo Pump and Generators—One, 3-cylinder, 7½ x 10½ inches, 60 horsepower at 400 revolutions per minute, Cooper-Bessemer diesel engine driving one 750 gallons per minute Viking cargo pump. Belted to the shaft of this pumping engine is a 5-kilowatt Diehl generator. There is also a 2-kilowatt Diehl generator belted to the main engine tailshaft.

DESCRIPTION

Of all-welded construction, on the B. F. Smith system, this vessel is designed for carrying oil in bulk in the coastwise trade in and around Massachusetts and New York. She has a capacity of 5000 barrels of oil on a draft of 8 feet, 6 inches.

AUXILIARY EQUIPMENT

Pumps—Viking Pump Co.
Windlass—American Engineering Co.
Steering—Hand steering gear
Propellors—Hyde Windlass Co.
Heating Boiler—Crane
Oil Burners—Ray Burner Co.

REMARKS

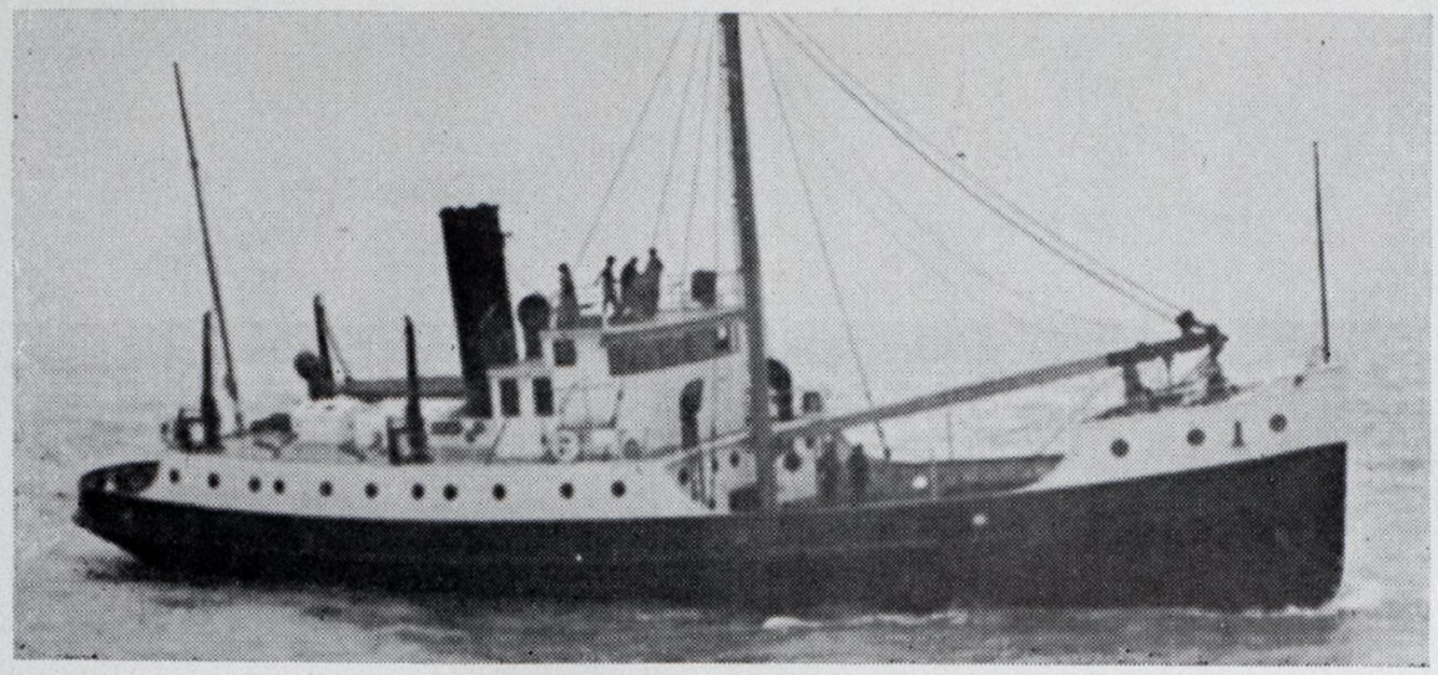
This vessel was built under the supervision and to the highest classification of the American Bureau of Shipping. Her home port is Boston out of which port she is engaged in the oil carrying trade of her owners, M. A. Powers and D. H. Thurber.

Crew quarters are located aft. This space is heated by a Crane steam heating system. The oil burning boiler supplying steam for this system is located in the engine room.

Cargo piping of the vessel was laid on the floors of the oil tanks. Expansion joints have been fitted in all cargo lines to allow for any vibration or expansion while under the strain of pumping. The hand wheels for operating the valves are the only objects which show above the expansion trunk on the main deck and there is very little chance of ice or snow collecting on top of the trunk.

Forward of the cargo oil tanks there is a dry cargo hold. Forward of the dry cargo hold is the chain locker and peak tank. The vessel is equipped with two 1000-pound stockless anchors.

TAMARACK—Lighthouse Tender—Lakes—Single Screw—Diesel Electric



Name—TAMARACK
Owner—United States Bureau Lighthouses
Builder—Manitowoc Shipbuilding Corp.
Naval Architect—Bureau of Lighthouses
Launched—Aug. 21, '34; **Comp.** Nov. 20, '34
Classification — Lighthouse Tender

HULL PARTICULARS

Length over all, 124 feet, 2¾ inches; length between perpendiculars, 111 feet, 8 inches; breadth molded, 29 feet; depth molded, 10 feet; draft, 7 feet; displacement loaded, 400 tons; cargo capacity, 30 tons; bunker diesel fuel capacity, 45 tons; speed, 10¼ knots.

MACHINERY PARTICULARS

Main Engines—Two, 8-cylinder, 4-cycle, solid injection, diesel engines, built by Winton Engine Corp. Size of engines, 8½-inch bore, 12-inch stroke, each developing 300 brake horsepower at 550 revolutions per minute. Each engine is direct connected to a 190-kilowatt, Westinghouse, direct current generator and a 15-kilowatt exciter.

Main Propulsion Motor—One, 450 shaft horsepower at 400 revolutions per minute, direct current, double armature, Westinghouse electric motor for main and major auxiliary purposes. This motor is direct connected to the propeller through a Kingsbury thrust.

Auxiliary Generator—One, 7¼-kilowatt, direct current, Westinghouse generator driven by a 2-cylinder Winton diesel engine.

DESCRIPTION

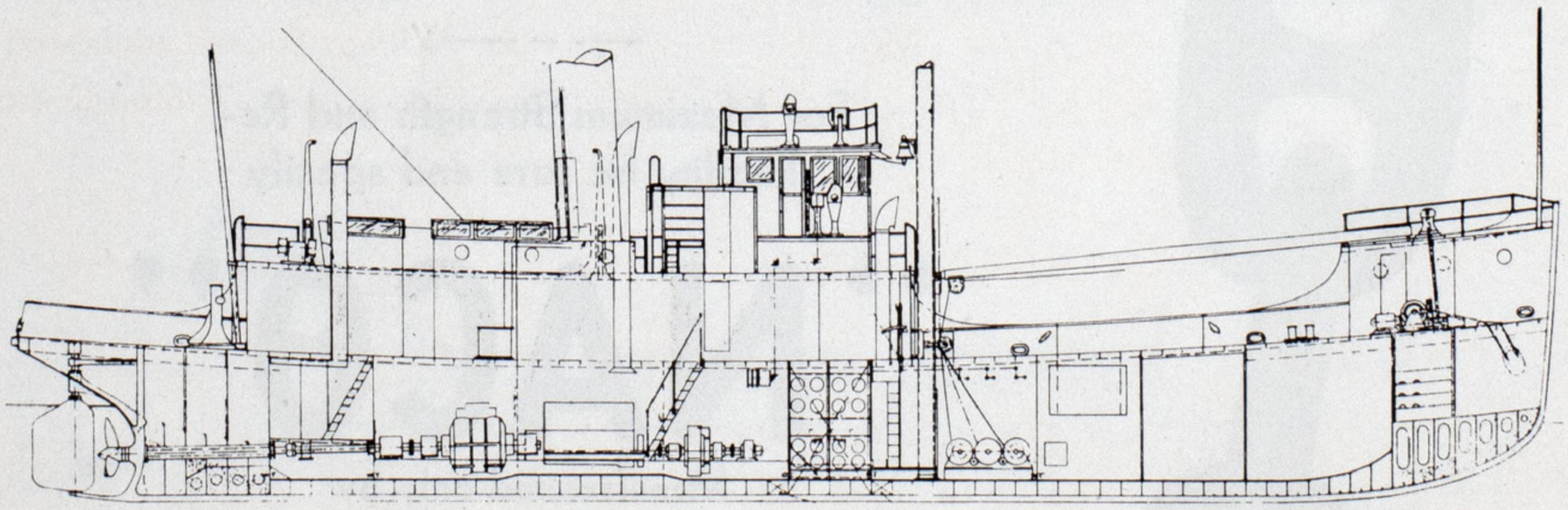
Of all steel construction and single screw, diesel electric propulsion this vessel now operates for the bureau of lighthouses and is based on Detroit, Mich. Accommodations are provided for a complement of 16. A spare room is fitted for the use of the district superintendent.

AUXILIARY EQUIPMENT

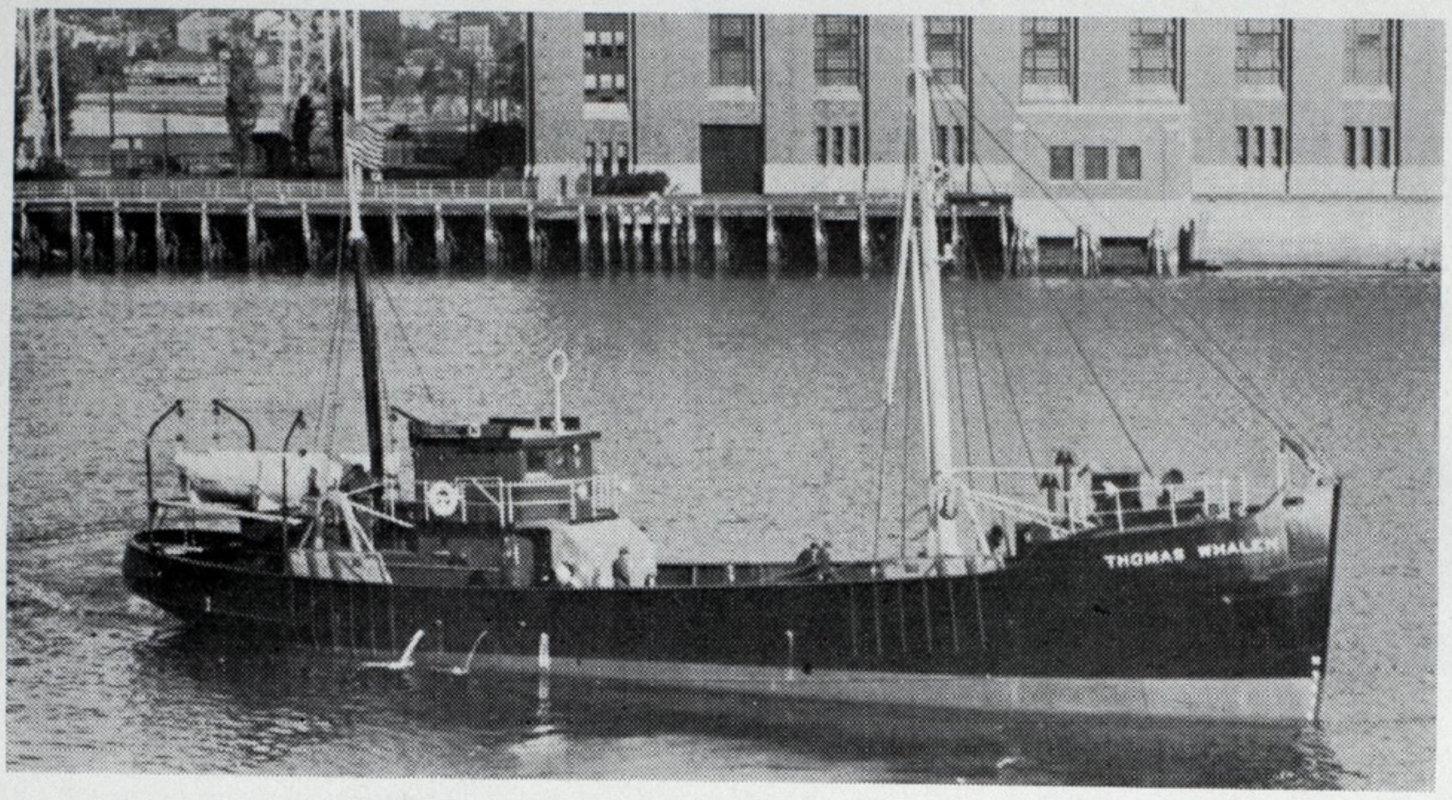
Pumps—Nash; Viking; Goulds
Windlass—American Engineering Co.
Winches—Lidgerwood Mfg. Co.
Steering Engine—Sperry Gyroscope Co.
Propellers—Manitowoc Shipbuilding Corp.
Refrigeration—Kelvinator
Heating Boiler—Almy Water Tube Boiler
Air Compressor—Worthington Pump & Mach.
Air Whistle Set—Allan Cunningham
Engine Telegraphs—The Kirk, Habicht Co.
Galley Range—Ingle Mfg. Co.
Compass—Kelvin & Wilfrid O. White Co.
Hardware—The Dayton Mfg. Co.
Copper Convectors—Chase Brass & Copper
Switchboards—Westinghouse Elec. & Mfg. Co.
Wrought Iron Pipe—A. M. Byers Co.
Silencers—Engineering Specialties Co.
Windows—Kearfott Engineering Co. Inc.

REMARKS

This vessel is fitted with a 10-ton derrick for handling buoys. The bow is reinforced and double plated for ice breaking. Power for operating auxiliaries, including the five drum cargo hoist, is normally supplied from the exciters on extensions of the main generator shafts. The cargo hoist is located in the main hold and can handle weights up to 10 tons.



THOMAS WHALEN—Trawler—Ocean—Single Screw—Diesel



DESCRIPTION

The new trawlers, THOMAS WHALEN and sister vessels, ATLANTIC and PLYMOUTH, built during 1934 at the Fore River plant of the Bethlehem Shipbuilding Corp. are very similar to the three trawlers QUINCY, DORCHESTER and WINTHROP, built about five years ago by the same yard for the same owner.

Name—THOMAS WHALEN
Owner—R. O'Brien & Co.
Builder—Bethlehem S. B. Corp.
Naval Architect—Builder and Owner
Launched—Sept. 12, '34; **Comp.** Oct. 9, '34
Sister Ships—ATLANTIC and PLYMOUTH. Launched respectively, Sept. 12, 1934; and Sept. 25, 1934. Completed respectively, Oct. 25, 1934 and Oct. 29, 1934.

HULL PARTICULARS

Length over all, 110 feet, 3 inches; length between perpendiculars, 102 feet; breadth molded, 22 feet; depth molded, 11 feet, 7¾ inches; draft, loaded, 10 feet; draft light, 7 feet, 10½ inches; displacement loaded, 370 tons; gross tonnage, 163.84; net tonnage, 84; cargo capacity, about 100 tons; bunker diesel fuel capacity, about 18 tons; speed, 10 knots.

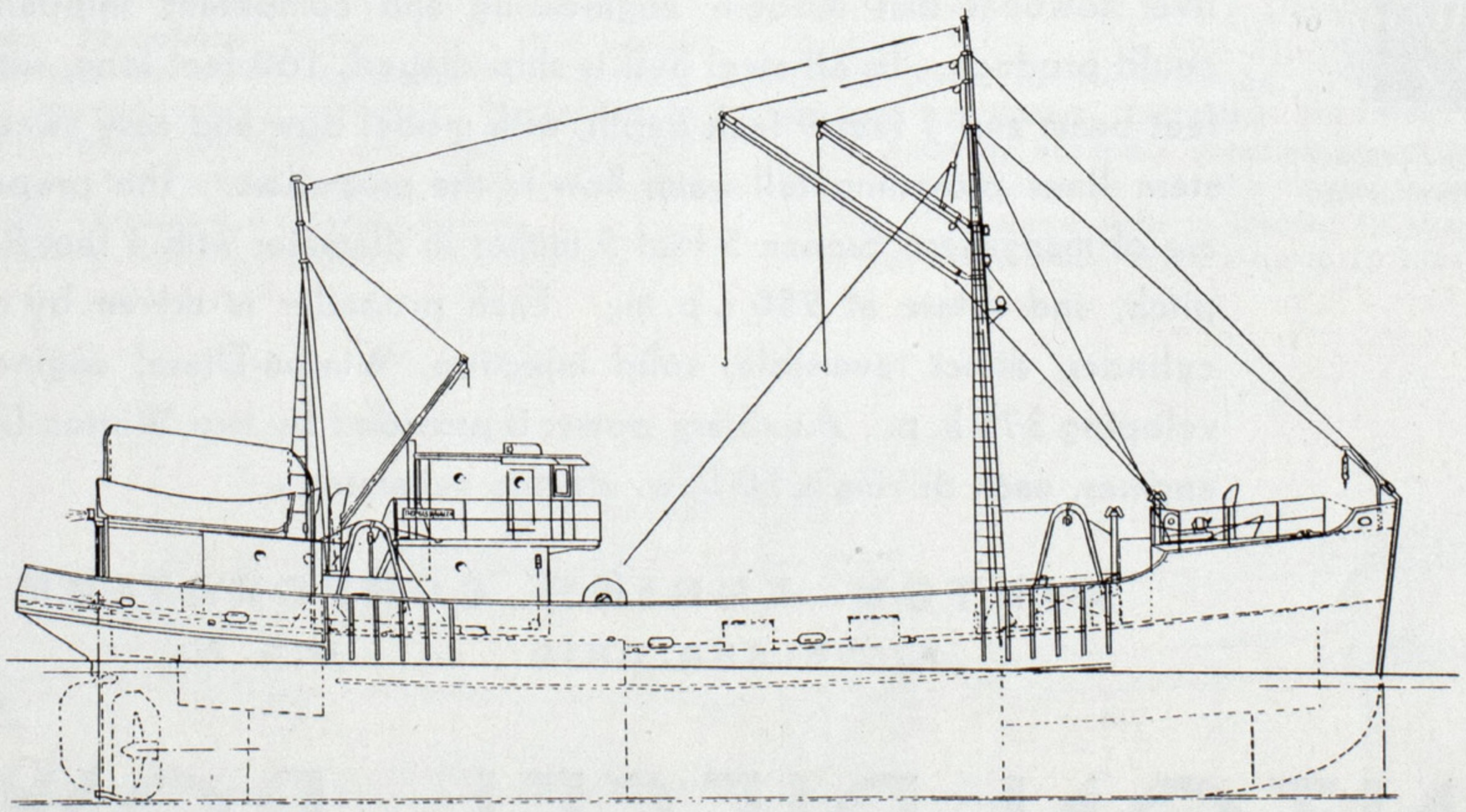
MACHINERY PARTICULARS

Main Engine—One, 6-cylinder, 12½-inch bore by 18-inch stroke, Nelseco diesel engine; built by Electric Boat Co. This engine develops 350 brake horsepower at 280 revolutions per minute. The engine drives the propeller through a Kinney sailing clutch.

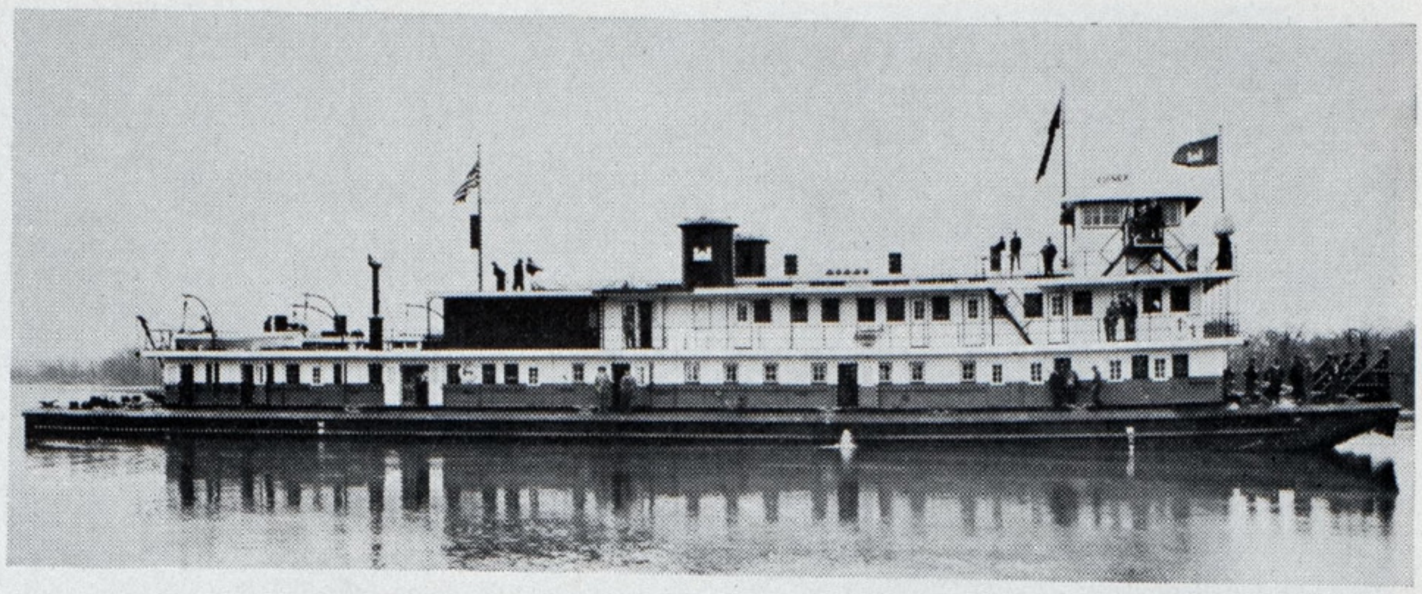
Generators—One, 5-kilowatt capacity generator designed for floating on the storage batteries and driven by a Colo diesel engine which also drives a Worthington air compressor. Also one 5-kilowatt capacity, differential, compound wound generator driven from the main engine and designed to operate at a speed of 750 to 1065 revolutions per minute. Both of the generators were built by the Electro-Dynamic Works of the Electric Boat Co.

AUXILIARY EQUIPMENT

Pumps—Warren Steam Pump Co.
Fish Hoist—New England Trawler Equip.
Winches—Bethlehem Shipbuilding Corp.
Propellers—Mechanics Iron Foundry Co.
Fathometer—Submarine Signal Co.
Galley Range—The Stamford Foundry Co.
Radio Equip.—Mackay Radio Telegraph Co.
Compass—Kelvin & Wilfrid O. White Co.
Thrust Bearing—Kingsbury Machine Works
Wire Cable—Williamsport Wire Rope Co.



COINER—Towboat—Rivers—Twin Screw—Diesel



DESCRIPTION

This vessel is of twin screw diesel tunnel type with modified scow bow, and was built for the district office of the Engineer Corps at Vicksburg, Miss. In service for general towing in connection with river improvement and maintenance.

Name—COINER
Owner—United States Engineers
Builder—Marietta Mfg. Co.
Naval Architect—Office, Chief of Engineers
Launched—Feb. 5, '35; **Comp.** March 1935
Classification—River towboat, tunnel stern

HULL PARTICULARS

Length over all, 177 feet, 3¼ inches; length between perpendiculars, 176 feet; breadth molded, 38 feet; depth molded, 8 feet, 6 inches; draft, 5 feet; displacement, 875 tons; gross tonnage, 726.38; net tonnage, 394; bunker diesel fuel capacity, 72 tons; speed, maximum, 12 statute miles per hour.

MACHINERY PARTICULARS

Main Engines—Two, 6-cylinder, 4-cycle, solid injection, diesel engines; built by Winton Engine Corp. Size, 16-inch bore, 22-inch stroke; each engine developing 650 horsepower at 250 revolutions per minute. Each engine is direct connected through a Kingsbury thrust to a propeller operating in a tunnel at the stern.

Auxiliary Generators—Three, two of which are of 75 kilowatts each and one of 15 kilowatts, direct current, General Electric generators. All generators are driven by Winton diesel engines. One of these engines is of 20 horsepower and the other two are 135 horsepower.

AUXILIARY EQUIPMENT

Pumps—Ingersoll-Rand; Viking; Dayton-Dowd.
Capstans (Electric)—Marietta Mfg. Co.
Winches (Hauling)—Amer. Engineering Co.
Steering Engine—American Engineering Co.
Propellers—Hyde Windlass Co.
Refrigeration—Baker Ice Machine Co.
Engine Telegraphs—The Kirk, Habicht Co.
Galley Range—Elisha Webb & Son Co.
Oil Purifiers—The Sharples Specialty Co.
Silencers—Engineering Specialties Co.
Plating, Pipe (Wrought iron)—A. M. Byers
Sleeves (Prop. Shaft)—Shenango-Penn Mold
Thrust Bearings—Kingsbury Machine Works
Fire Extinguishing—C-O-Two Fire Equip. Co.
Stern Bearings—Rubber, B. F. Goodrich Co.
Signal Telegraphs—Chas. Cory Corp.

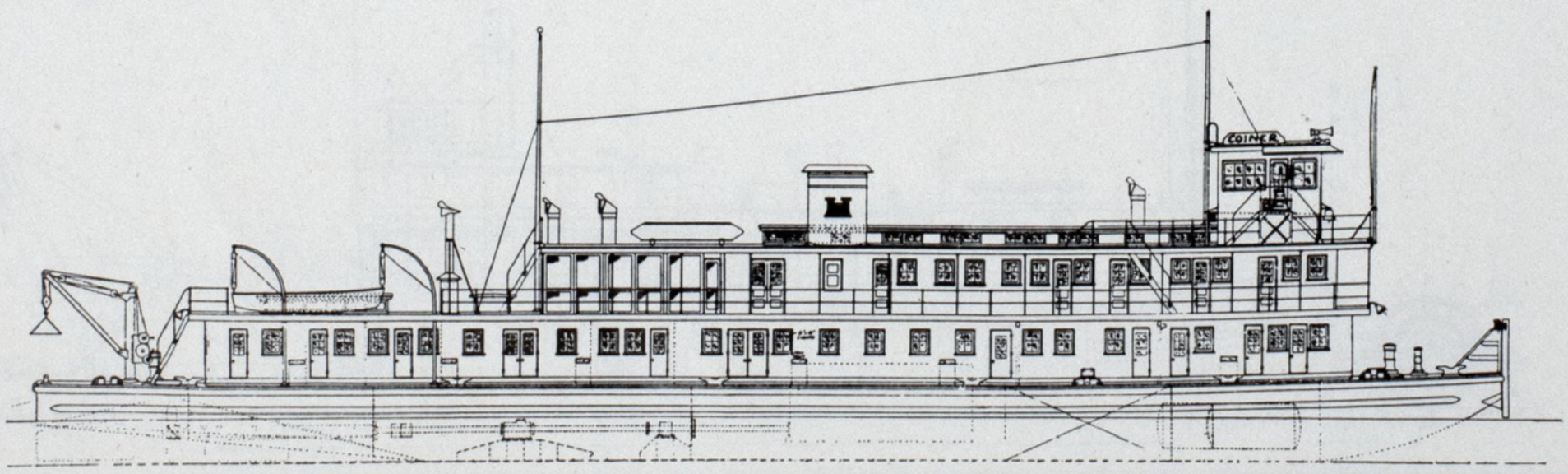
REMARKS

This powerful towboat was designed particularly for rapid shifting of dredging equipment on the lower Mississippi, thus relieving towboats and their tows which may be delayed at shallow crossings. The COINER is unique in that it has cabin accomodations for three crews.

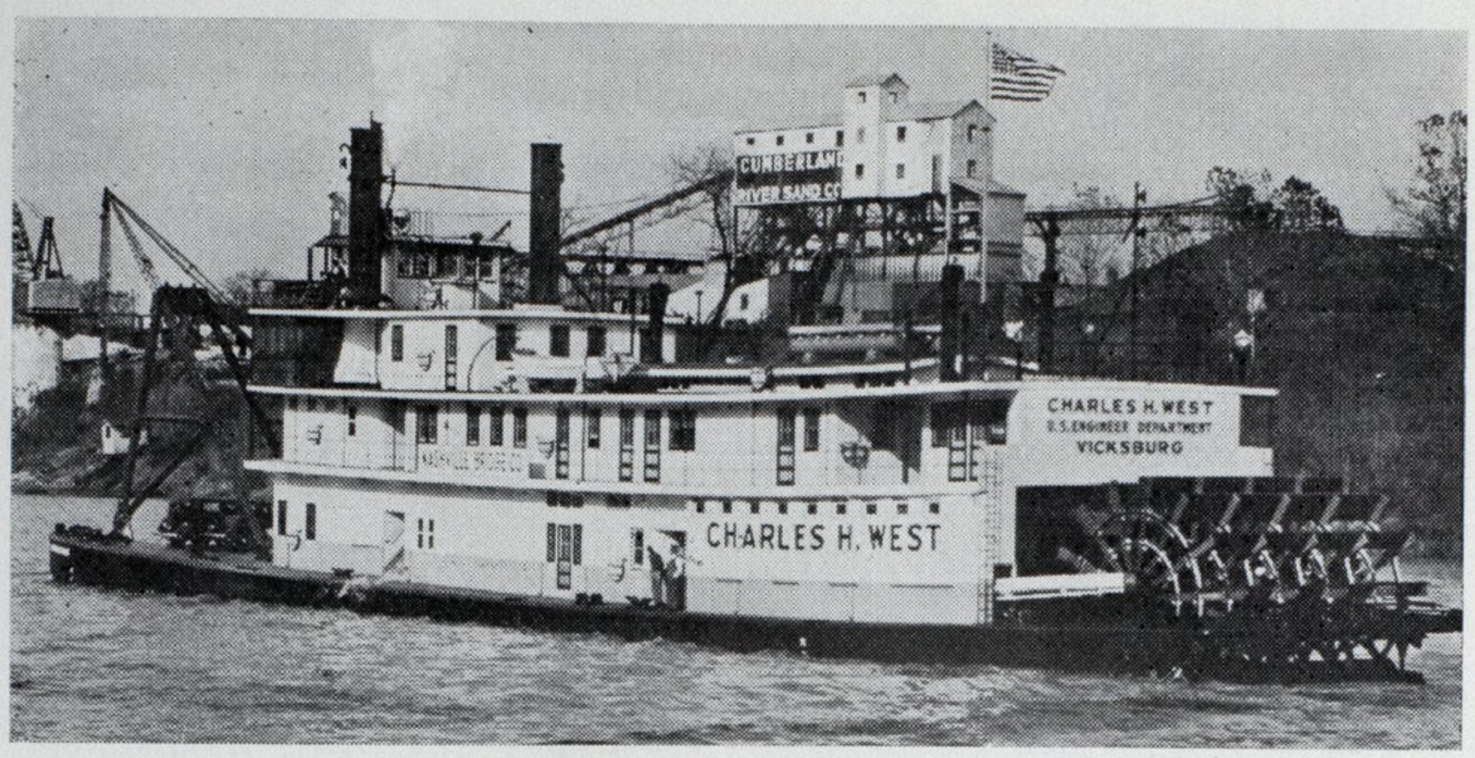
Construction is of wrought iron and steel and the cost of the vessel is approximately $350,000. The crew complement consists of 46.

This is the most powerful towboat in the Engineer Corps and though it has a normal rating of 1300 horsepower, it is possible to operate for short periods at a total output of 1600 horsepower. It is estimated that the vessel will handle a tow of loaded barges aggregating 10,000 long tons at a speed of 7 miles per hour in still water.

The COINER is outfitted with self-contained units, such as water filtering and chlorination system, electric generation for auxiliary power and illumination, mechanical refrigeration, oil burning galley range, laundry, steam heating and radio communication.



CHARLES H. WEST—Snagboat—Rivers—Sternwheel—Steam



Name—CHARLES H. WEST
Owner—United States Engineers
Builder—Nashville Bridge Co.
Naval Architect—Miss. River Commission
Launched—June 24, '34; **Comp.** Nov. 10, '34
Classification—Inland Rivers, Snagging

HULL PARTICULARS

Length over all, 195 feet; length between perpendiculars, 170 feet; breadth molded, 38 feet; depth molded, 7 feet, 6 inches; draft loaded, 4 feet, 9 inches; draft light, 4 feet, 6 inches; displacement loaded, 825 tons; gross tonnage, 750; net tonnage, 750; cargo capacity, none; bunker fuel oil capacity, 42 tons; speed, 11 statute miles per hour.

MACHINERY PARTICULARS

Main Engines—Two, tandem compound, steam, reciprocating engines, of poppet valve, paddle wheel type. Size, 14 x 28 inches and 6 feet stroke. Total horsepower of the two engines is 750 at 22 revolutions per minute.

Boilers—Two, watertube marine boilers of forged steel sectional header type with a total heating surface of 4320 square feet in the two boilers. Boilers built by Foster Wheeler Corp. Operating pressure per square inch is 250 pounds gage; superheat 65 degrees Fahr.; normal capacity, 8000 pounds of steam per boiler. Boilers are oil fired, fitted with Ray burners.

Auxiliary Generators—Two, one of 10 kilowatts and one of 15 kilowatts, of Engberg type, built by Troy Engine & Machine Co.

DESCRIPTION

This vessel is of tandem compound steam paddle wheel type, with special snagging scow bow and was built for the United States war department for the district office of the engineer corps at Vicksburg, Miss.

AUXILIARY EQUIPMENT

Pumps—Worthington Pump & Mach. Corp.
Windlass—Hyde Windlass Co.
Winches—Clyde Iron Works
Steering Engine—Gardner Machine Co.
Refrigeration—Frick Co.
Oil Burning Equipment—Ray Burner Co.
Superheaters—Foster Wheeler Corp.
Electric Generators—Troy Eng. & Mach.
Safety Valves, Gages—Ashton Valve Co.

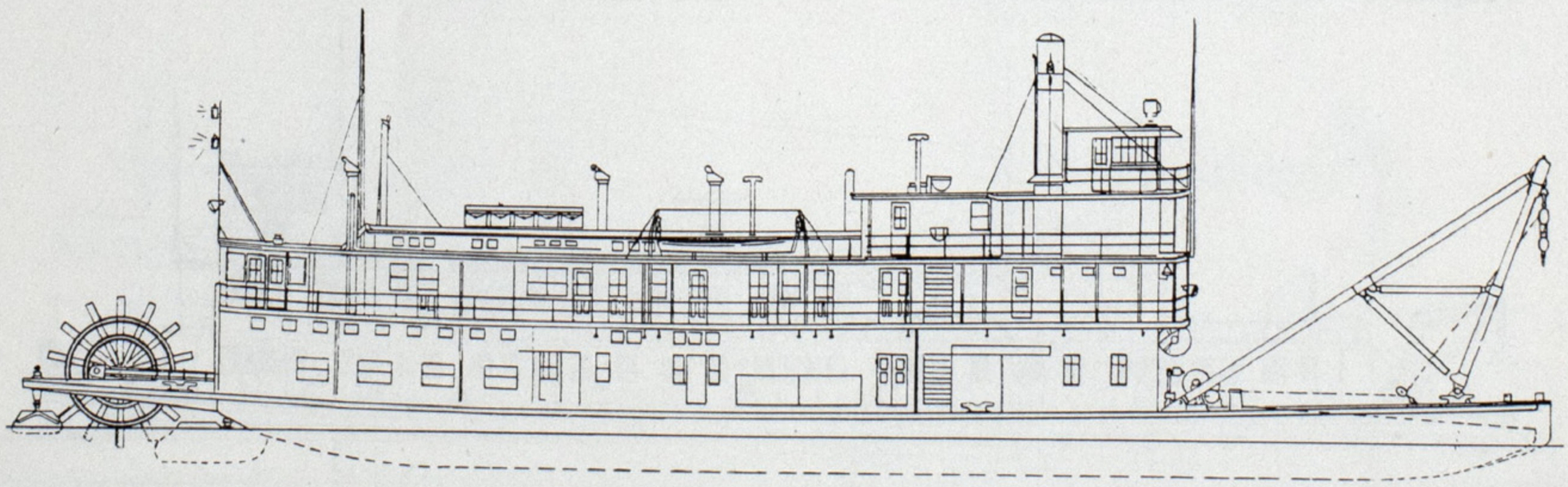
REMARKS

This vessel, of substantial steel construction and of the type known as snagboat, was built for general snagging and channel maintenance service on the Mississippi river. The cost was approximately $275,000. Accommodations are provided for a crew of 46 officers and men.

The design is modern, combining the power of the old barge side wheeler snagboats with the speed of the smaller sternwheel types.

By the use of powerful capstans and winches and an extra heavy tubular "A" frame, this vessel is capable of exerting a pull of 90 tons on any obstruction. As speeds go on the river, the CHARLES H. WEST is unusually fast. When running 10 miles per hour in still water, the main propelling engines develop approximately 750 horsepower.

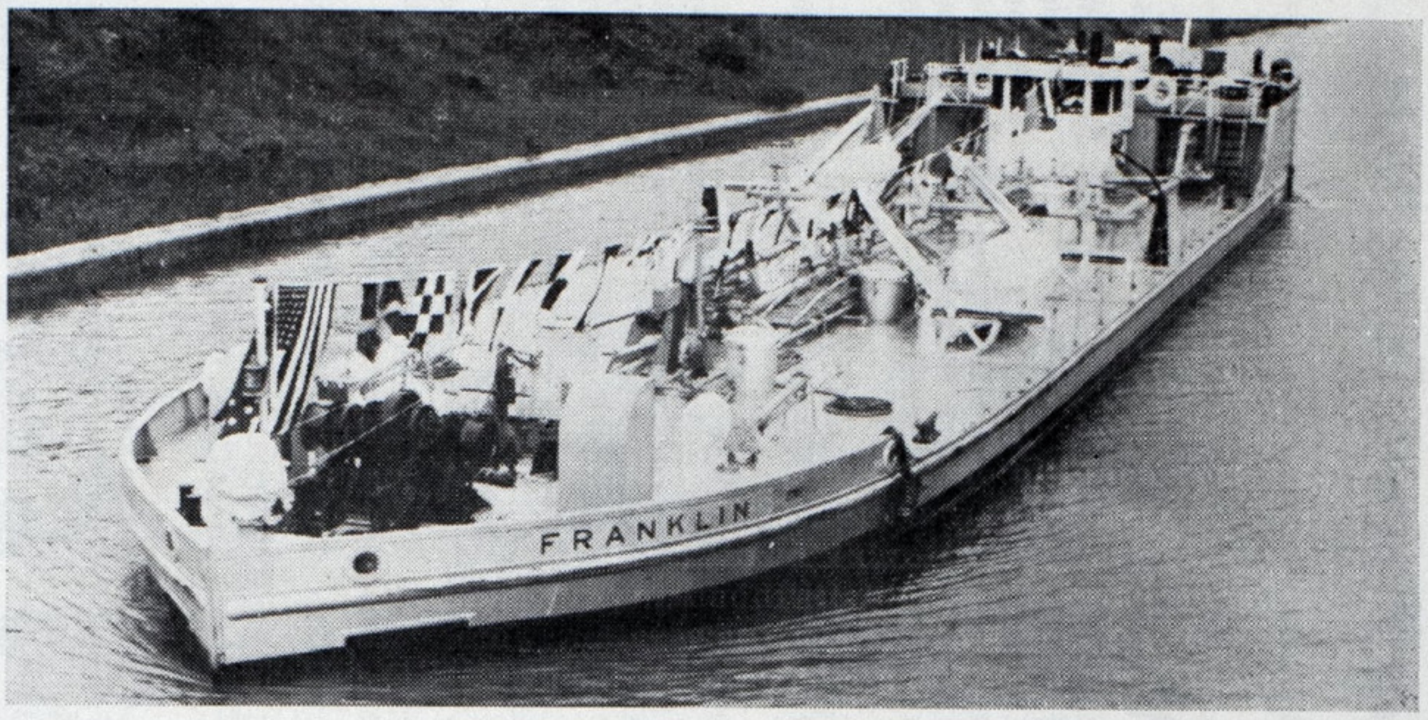
Included in her equipment are, a water filtration and distillation system, electric generators, mechanical refrigeration, oil burning boilers and galley range, laundry, steam heating and radio communication.



FRANKLIN—Tanker—Canals—Single Screw—Diesel Electric

DESCRIPTION

The second all-welded tank vessel placed in service by the owner during the past four years. A sistership, as far as hull is concerned, of the diesel electric tanker WHITE FLASH, launched in 1931, and the fourteenth vessel of diesel electric drive to be designed and operated by The Atlantic Refining Co.



Name—FRANKLIN
Owner—The Atlantic Refining Co.
Builder—Sun Shipbuilding & Dry Dock Co.
Launched—June 27, '34; **Comp.** July 5, '34
Classification—American Bureau of Shipping

HULL PARTICULARS

Length overall, 201 feet; length between perpendiculars, 190 feet; breadth molded, 34 feet; depth molded, 12 feet; draft, loaded, 9 feet, 6 inches; displacement loaded, 1270 tons; gross tonnage, 601.97; net tonnage, 355; bunker fuel (diesel fuel oil), capacity in tons, 37.6; speed, 9 knots.

MACHINERY PARTICULARS

Main Engines—Two, McIntosh & Seymour, 4-cycle, 6-cylinder mechanical (solid) injection diesel engines. Size, 9½ x 10½ inches; each 265 brake horsepower at 600 revolutions per minute, direct connected to a generator.

Main Generators—Two, General Electric, direct current, each of 150 kilowatts, 240 volts, and each direct connected to one of the 265-horsepower diesel engines described above. Two exciters of 25 kilowatts capacity each, 120 volts, attached to each one of the two main generators.

Propelling Motor—One, General Electric, direct current, single armature, rated at 375 horsepower at 150 revolutions per minute, 500 volts.

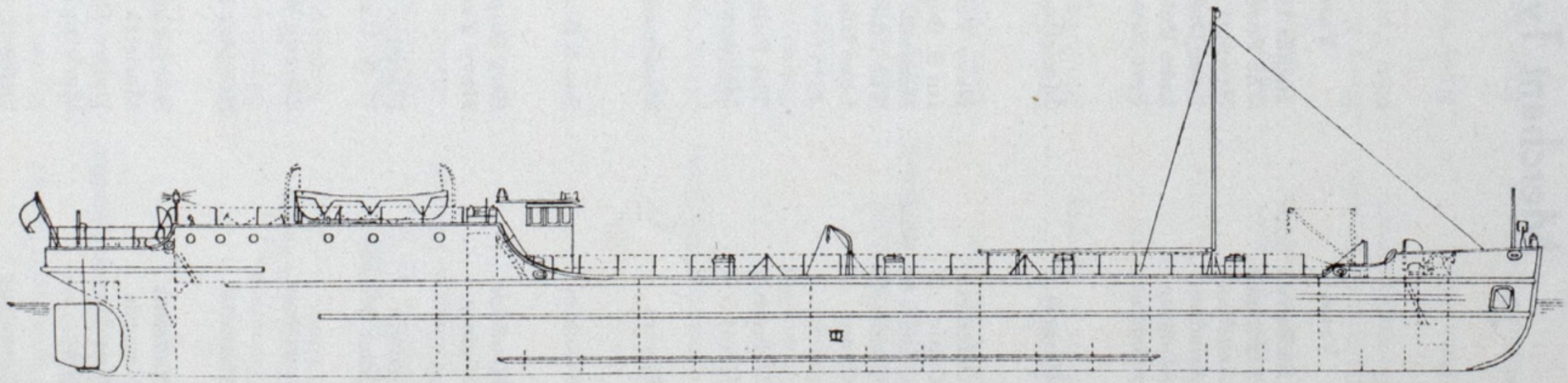
AUXILIARY EQUIPMENT

Pumps—Northern; Jennings; and Westco
Windlass—American Engineering Co.
Steering Gear—Amer. Eng. (electro hydraul.)
Gypsy—Amer. Eng. Co. (electric)
Propellers—Cramp Brass & Iron Foundries
Refrigeration—Carrier Brunswick Int. Inc.
Davits, Lifeboats—Welin Davit & Boat Corp.
Sleeve (Prop. Shaft)—Shenango-Penn Mold
Fire Exting.—C-O-Two Fire Equipment Co.
Wire Cable—Williamsport Wire Rope Co.
Silencers, Spark Arresters—Eng. Specialties
Galley Range—Elisha Webb & Son Co.
Oil Purifiers—Goulds Pumps Inc. (Hydroil)
Air Compressor—Ingersoll Rand
Electric Motors—General Electric Co.

REMARKS

This all-welded tanker, built on the longitudinal system of framing, is designed primarily for inland waterways service in carrying refined petroleum products. She has the conventional tanker arrangement with a centerline bulkhead and five cargo tanks. The machinery space is located aft and the dry cargo hold is located forward. No pump room is required, as the depth of hold is only 12 feet allowing cargo pumps and all cargo piping to be placed on deck.

Propulsion control is from pilot house and bridge deck by variable voltage or Ward-Leonard system with duplicate inter-connected stands, each having steering wheel, rudder angle indicator, propulsion control levers, and propeller revolutions indicator, all combined in a single pedestal.



Merchant Type Steel Vessels Over 100 Tons Under Construction in American Shipyards During 1934

Vessels Completed, Alphabetically Arranged

Vessel	Yard	Type	Class	Gross	Owners	Mach.	H.P.	Len. ft. in.	Beam ft. in.	Dep. ft. in.	Fuel	Remarks	Status
Alabama	Ingalls Iron Works	Dredge	Rivers	1093	McWilliams Dredging Co.	Recip.	1200**	140	49	9	Oil	Non-self-propelled	Completed
Algonquin	The Pusey & Jones Corp.	Cutter	Coast	1000*	U. S. Coast Guard	Turbine	1500	165	36	21	Oil	Coastwise Service	Completed
Angelina	Newport News S.B. Co.	Cargo	Ocean	5200	A. H. Bull Steamship Co.	Turbine	3150	408	54	30 6	Oil	Speed, 13 knots	Completed
Ariadne	Lake Union D.D. & M. Wks.	Patrol	Coast	334*	U. S. Coast Guard	Oil Eng.	1340	165	25 3	13 2	Oil	Twin Screw Diesel, Patrol B.	Completed
Atalanta	Lake Union D.D. & M. Wks.	Patrol	Coast	334*	U. S. Coast Guard	Oil Eng.	1340	165	25 3	13 2	Oil	Twin Screw Diesel, Patrol B.	Completed
Atlantic	Fore River, Beth. S.B. Co.	Trawler	Ocean	163	R. O'Brien & Co.	Oil Eng.	350	110 3	22	11 7¾	Oil	Banks Fishing	Completed
Burgess	Marietta Mfg. Co.	Dredge	Rivers	1502	U. S. Engineers, Memphis	Recip.	2000	244	52	9	Oil	River Dredging	Completed
Calumet	Navy Yard, Charleston	Cutter	Harbor	290*	U. S. Coast Guard	Oil Elec.	800	110 6	24	12 7	Oil	Coast Guard Harbor Service	Completed
Celtic	Ira S. Bushey & Sons	Tug	Canal	121	Ira S. Bushey & Sons	Oil Eng.	650	78	21 10	10	Oil	Hudson River, Barge Canal	Completed
Charles H. West	Nashville Bridge Co.	Snag B.	Rivers	825	U. S. Engineers	Recip.	800	170	38	7 6	Oil	Mississippi River	Completed
Comanche	The Pusey & Jones Corp.	Cutter	Coast	1000*	U. S. Coast Guard	Turbine	1500	165	36	21	Oil	Coastwise Service	Completed
Cyane	Lake Union D.D. & M. Wks.	Patrol	Coast	334*	U. S. Coast Guard	Oil Eng.	1340	165	25 3	13 2	Oil	Twin Screw Diesel Patrol B.	Completed
Delmarva	The Pusey & Jones Corp.	Ferry	Bays	1497	Virginia Ferry Corp.	Recip.	3000	260	59	19 1	Oil	Auto and Passenger Ferry	Completed
Dione	Manitowoc S.B. Corp.	Patrol	Coast	337*	U. S. Coast Guard	Oil Eng.	1340	165	25 3	13 2	Oil	Twin Screw Diesel, Patrol B.	Completed
Electra	Manitowoc S.B. Corp.	Patrol	Coast	337*	U. S. Coast Guard	Oil Eng.	1340	165	25 3	13 2	Oil	Twin Screw Diesel, Patrol B.	Completed
Franklin	Sun S.B. & D.D. Co.	Tanker	Bays	602	Atlantic Refining Co.	Oil Elec.	530	201	34	12	Oil	Barge Canal, Coastwise	Completed
Hemlock	Berg Shipbuilding Co.	Tender	Coast	770*	U. S. Bureau Lighthouses	Recip.	1000	174 6	32	14 6	Oil	Alaska Coast	Completed
Hudson	Navy Yard, Portsmouth	Cutter	Harbor	290*	U. S. Coast Guard	Oil Elec.	800	110 6	24	12 7	Oil	Coast Guard Harbor Service	Completed
Jadwin	Marietta Mfg. Co.	Dredge	Rivers	1502	U. S. Engineers, Memphis	Recip.	2000	244	52	9	Oil	River Dredging	Completed
John Ordway	U. S., Gasconade, Mo.	T. Boat	Rivers	130	U. S. Engineers	Oil Eng.	210	90	22	5 3	Oil	River Towing	Completed
Luzitania	Electric Welding Co.	Tanker	Harbor	270	Luzo Petrol. Transp. Co.	Oil Eng.	280	116 6	26	10 6	Oil	Harbors, Bays, Coastwise	Completed
Manuela	Newport News S.B. Co.	Cargo	Ocean	5200	A. H. Bull Steamship Co.	Turbine	3150	408	54	30 6	Oil	Speed, 13 knots	Completed
Navesink	Navy Yard, Charleston	Cutter	Harbor	290*	U. S. Coast Guard	Oil Elec.	800	110 6	24	12 7	Oil	Coast Guard Harbor Service	Completed
Nemesis	Marietta Mfg. Co.	Patrol	Coast	334*	U. S. Coast Guard	Oil Eng.	1340	165	25 3	13 2	Oil	Twin Screw Diesel, Patrol B.	Completed
New Haven Socony	United Dry Docks Inc.	Tanker	Coast	1242	Socony-Vacuum Oil Co.	Oil Eng.	750	260	40	14	Oil	Coastwise, Canal, Lakes	Completed
Nike	Marietta Mfg. Co.	Patrol	Coast	334*	U. S. Coast Guard	Oil Eng.	1340	165	25 3	13 2	Oil	Twin Screw Diesel, Patrol B.	Completed
Onondaga	Defoe B. & M. Works	Cutter	Coast	1000*	U. S. Coast Guard	Turbine	1500	165	36	21	Oil	Lakes or Coastwise	Completed
Pandora	Manitowoc S.B. Corp.	Patrol	Coast	337*	U. S. Coast Guard	Oil Eng.	1340	165	25 3	13 2	Oil	Twin Screw Diesel, Patrol B.	Completed
Patrick Gass	U. S., Gasconade, Mo.	T. Boat	Rivers	130	U. S. Engineers	Oil Eng.	210	90	22	5 3	Oil	River Towing	Completed

Paul Dana	Ira S. Bushey & Sons	Tanker	Coast	373	Diesel Tank. Paul Dana Inc.	Oil Eng.	350	140	26	11 3	Oil	Harbor, coastwise	Completed
Peace	Dravo Contracting Co.	T. Boat	Rivers	650	Union Barge Line Corp.	Oil Eng.	750	160	34	7 9	Oil	River Towing	Completed
Pioneer	Dravo Contracting Co.	T. Boat	Rivers	153	Dravo Contracting Co.	Oil Eng.	240	80	21	6 9	Oil	River Towing	Completed
Plattsburgh Socony	United Dry Docks Inc.	Tanker	Coast	1242	Socony-Vacuum Oil Co.	Oil Eng.	750	260	40	14	Oil	Coastwise, Canal, Lakes	Completed
Plymouth	Fore River, Beth. S.B. Co.	Trawler	Ocean	163	R. O'Brien & Co.	Oil Eng.	350	110 3	22	11 7¾	Oil	Banks Fishing	Completed
Poughkeepsie Socony	United Dry Docks Inc.	Tanker	Coast	1235	Socony-Vacuum Oil Co.	Oil Eng.	750	250	40	14	Oil	Coastwise, Canal, Lakes	Completed
Regent	Sp. Pt., Beth. S.B. Co.	Tanker	Coast	1200	Gulf Refining Co.	Oil Eng.	800	247	40	14 6	Oil	Coastwise, Barge Canal	Completed
Tahoma	Defoe B. & M. Works	Cutter	Coast	1000*	U. S. Coast Guard	Turbine	1500	165	36	21	Oil	Lakes or Coastwise	Completed
Tamarack	Manitowoc S.B. Corp.	Tender	Lakes	400*	U. S. Bureau Lighthouses	Oil Elec.	450	124 3	29	10	Oil	Great Lakes	Completed
Thomas Whalen	Fore River, Beth. S.B. Co.	Trawler	Ocean	163	R. O'Brien & Co.	Oil Eng.	350	110 3	22	11 7¾	Oil	Banks Fishing	Completed
Triton	Marietta Mfg. Co.	Patrol	Coast	334*	U. S. Coast Guard	Oil Eng.	1340	165	25 3	13 2	Oil	Twin Screw Diesel, Patrol B.	Completed
W. H. Welch	Spedden S.B. Co.	Tender	Ocean	186	U. S. Public Health	Oil Elec.	720	100 8	23 1	12 11	Oil	Quarantine Service	Completed
William M. Black	Marietta Mfg. Co.	Dredge	Rivers	2300	U. S. Engineers	Recip.	1600	270	50	8 6	Oil	Side Wheel, Pipe Line	Completed
William S. Mitchell	Marietta Mfg. Co.	Dredge	Rivers	2300	U. S. Engineers	Recip.	1600	270	50	8 6	Oil	Side Wheel, Pipe Line	Completed

Vessels Under Construction as of December 31, 1934, Alphabetically Arranged

Alexander Hamilton	Navy Yard, New York	Cutter	Ocean	2000*	U. S. Coast Guard	Turbine	7000	327	41	24 ⅜	Oil	Twin Screw; Cruising	Under con.
Berkley	Norfolk S.B. & D.D. Corp.	Ferry	Harbor	225	Norfolk County Ferries	Oil Eng.	210	80	34	11	Oil	Portsmouth to Berkley	Under con.
Champion	Dravo Contracting Co.	T. Boat	Rivers	400	Pittsburgh Coal Co.	Recip.	800	148	24	6	Coal	River Towing	Under con.
Coiner	Marietta Mfg. Co.	T. Boat	Rivers	875	U. S. Engineers	Oil Eng.	1300	176	38	8 6	Oil	Twin Screw, Diesel, Towing	Under con.
George M. Bibb	Navy Yard, Charleston	Cutter	Ocean	2000*	U. S. Coast Guard	Turbine	7000	327	41	24 ⅜	Oil	Twin Screw; Cruising	Under con.
George W. Campbell	Navy Yard, Philadelphia	Cutter	Ocean	2000*	U. S. Coast Guard	Turbine	7000	327	41	24 ⅜	Oil	Twin Screw; Cruising	Under con.
Hull No. 150	Lake Wash. Shipyards	Pass.	Coast	1900	Northland Transp. Co.	Oil Eng.	2000	220 10	40 6	23 1½	Oil	Northwest, to Alaska	Under con.
Jasmine	Dravo Contracting Co.	Tender	Gulf	187*	U. S. Bureau Lighthouses	Oil Eng.	200	91 4	23	8 3	Oil	Lighthouse Tender	Under con.
John C. Spencer	Navy Yard, New York	Cutter	Ocean	2000*	U. S. Coast Guard	Turbine	7000	327	41	24 ⅜	Oil	Twin Screw; Cruising	Under con.
M. A. Powers	Charleston D.D. Co.	Tanker	Bays	494	Thurber & Powers	Oil Eng.	400	150	31	11	Oil	Capacity 5000 Bbls.	Under con.
Magnolia	New York S.B. Co.	Tanker	Ocean	9600	Socony-Vacuum Oil Co.	Turbine	4000	500 1½	65 9	37	Oil	Tanker, Ocean Service	Under con.
Mohawk	The Pusey & Jones Corp.	Cutter	Coast	1000*	U. S. Coast Guard	Turbine	1500	165	36	21	Oil	Coastwise Service	Under con.
Roger B. Taney	Navy Yard, Philadelphia	Cutter	Ocean	2000*	U. S. Coast Guard	Turbine	7000	327	41	24 ⅜	Oil	Twin Screw; Cruising	Under con.
Rhododendron	Commercial Iron Works	Tender	Bays	150*	U. S. Bureau Lighthouses	Oil Elec.	240	80 6½	19	5 11	Oil	Twin Screw Diesel Tender	Under con.
Samuel D. Ingham	Navy Yard, Philadelphia	Cutter	Ocean	2000*	U. S. Coast Guard	Turbine	7000	327	41	24 ⅜	Oil	Twin Screw; Cruising	Under con.
Socony-Vacuum	New York S.B. Co.	Tanker	Ocean	9600	Socony-Vacuum Oil Co.	Turbine	4000	500 1½	65 9	37	Oil	Tanker, Ocean Service	Under con.
Tuckahoe	Navy Yard, Charleston	Cutter	Harbor	290*	U. S. Coast Guard	Oil Elec.	800	110 6	24	12 7	Oil	Coast Guard Harbor Service	Under con.
William J. Duane	Navy Yard, Philadelphia	Cutter	Ocean	2000*	U. S. Coast Guard	Turbine	7000	327	41	24 ⅜	Oil	Twin Screw; Cruising	Under con.

*Displacement Tonnage. **Non-Selfpropelled.

NAVAL SHIPBUILDING,

Large Program Now Underway

BUILDING of merchant vessels in the United States during 1934, it will be noted from the review elsewhere in this issue, was at almost a record low point. Had it not been for the considerable program of new construction for government departments such as the coast guard, lighthouse service and the engineers, the smaller shipyards in all sections would have had a most difficult time. But it is the large naval building program now under way in seven of the larger private shipyards and eight navy yards which has saved shipbuilding and allied industries from virtual shut down. This program is giving employment to many thousands of workers in shop and drawing office not only in the shipyards but in many other establishments, throughout the country, supplying equipment and materials for the building of these naval ships.

A total of 70 war vessels of various types are now under construction or contract in private yards and navy yards, according to the annual report of the chief of the bureau of construction and repair of the navy department. This program does not yet, however, provide for treaty strength. In order to bring the United States navy up to full strength in under age vessels in accordance with the London treaty it will be necessary to lay down 78 vessels of various types in addition to the program now under way.

These 78 vessels comprise one aircraft carrier of 14,500 tons; 2 light cruisers of a total of 17,100 tons; 24 submarines of 27,740 tons; and 51 destroyers of 77,635 tons. To reach treaty limits Japan requires only one additional vessel and Great Britain needs 44.

For the fiscal year 1935 the general board of the navy is proposing a program involving the construction of 24 war vessels. Favorable congressional action is expected. This program includes one 14,500-ton aircraft carrier to replace the LANGLEY; two 6-inch gun, 8000-ton cruisers to replace the OMAHA and MILWAUKEE; three 1850-ton destroyers; twelve light destroyers of 1500 tons each; and six submarines. If and when this program is authorized, it is expected that construction will be equally divided among private shipyards and navy yards, provided the latter are able to take on this new work in addition to their present work.

The current naval building program in private shipyards and navy yards, tabulated below, is mainly the result of awards made in August, 1933 and 1934. The 1933 program embraced a total of 37 vessels of which 21 were awarded to seven private yards and 16 were awarded to eight navy yards. The 1934 program included 24 vessels, 11 of which were awarded to six private yards and 13 were awarded to seven navy yards.

Naval Vessels Under Construction in Private Shipyards

Bethlehem Shipbuilding Corp.

Name	Type	Price	Award	Complete
QUINCY.....	H. Cruiser	$8,196,000	12/20/32	Jan. 1936
VINCENNES...	H. Cruiser	11,720,000	8/3/33	Jan. 1937
MOFFETT....	1850-ton Des.	3,896,000	8/3/33	Apr. 1936
PHELPS.....	1850-ton Des.	3,896,000	8/3/33	Dec. 1935
CLARK.....	1850-ton Des.	3,896,000	8/3/33	Feb. 1936
BALCH.....	1850-ton Des.	3,896,000	8/3/33	June 1936
DD 380.....	1500-ton Des.	3,784,000	8/22/34	Jan. 1937
DD 382.....	1500-ton Des.	3,784,000	8/22/34	Apr. 1937

Newport News Shipbuilding & Dry Dock Co.

ENTERPRISE..	Airplane Carrier	$19,000,000	8/3/33	Feb. 1937
YORKTOWN...	Airplane Carrier	19,000,000	8/3/33	Oct. 1936
BOISE.....	L. Cruiser	11,650,000	8/22/34	Aug. 1937

New York Shipbuilding Corp.

SAVANNAH...	L. Cruiser	$11,677,000	8/3/33	Aug. 1936
NASHVILLE...	L. Cruiser	11,677,000	8/3/33	Dec. 1936
PORTER.....	1850-ton Des.	3,775,000	8/3/33	Dec. 1935
SELFRIDGE...	1850-ton Des.	3,775,000	8/3/33	Feb. 1936
McDOUGAL...	1850-ton Des.	3,775,000	8/3/33	Apr. 1936
WINSLOW....	1850-ton Des.	3,775,000	8/3/33	June 1936
HULL No. 416	L. Cruiser	11,975,000	8/22/34	Aug. 1937

Electric Boat Co.

Name	Type	Price	Award	Complete
SHARK.....	Submarine	$2,770,000	8/3/33	Aug. 1935
TARPON.....	Submarine	2,770,000	8/3/33	Nov. 1935
PLUNGER.....	1300-ton Sub.	2,387,000	8/22/34	Nov. 1936
PINNA.....	1300-ton Sub.	2,387,000	8/22/34	Feb. 1937
POLLACK.....	1300-ton Sub.	2,387,000	8/22/34	May 1937

Bath Iron Works

DRAYTON....	1500-ton Des.	$3,429,000	8/3/33	Nov. 1935
LAMSON.....	1500-ton Des.	3,429,000	8/3/33	Jan. 1936

Federal Shipbuilding & Dry Dock Co.

FLUSSER.....	1500-ton Des.	$3,410,800	8/3/33	Nov. 1935
REID.....	1500-ton Des.	3,410,800	8/3/33	Feb. 1936
UNKNOWN....	1850-ton Des.	3,496,000	8/22/34	Jan. 1937
UNKNOWN....	1850-ton Des.	3,496,000	8/22/34	Mar. 1937

United Dry Docks Inc.

MAHAN.....	1500-ton Des.	$3,400,000	8/3/33	Oct. 1935
CUMMINGS...	1500-ton Des.	3,400,000	8/3/33	Dec. 1935
DD 384.....	1500-ton Des.	3,430,000	8/22/34	May 1936
DD 385.....	1500-ton Des.	3,430,000	8/22/34	July 1936

Naval Vessels Under Construction in U. S. Navy Yards

Navy Yard, New York

Name	Type	Price	Award	Complete
BROOKLYN...	L. Cruiser	$12,000,000	8/3/33	Aug. 1936
ERIE.....	Gunboat	1,500,000	8/3/33	Mar. 1936
UNKNOWN....	L. Cruiser	.....	8/22/34	Feb. 1938
HULL.....	Destroyer	.....	.....	July 1935
DALE.....	Destroyer	.....	.....	July 1935

Navy Yard, Philadelphia

Name	Type	Price	Award	Complete
PHILADELPHIA	L. Cruiser	$12,000,000	8/3/33	Jan. 1937
CASSIN.....	1500-ton Des.	2,700,000	8/3/33	Feb. 1936
SHAW.....	1500-ton Des.	2,700,000	8/3/33	May 1936
CA45.....	H. Cruiser	.....	8/22/34	.....

Navy Yard, Portsmouth, N. H.

Name	Type	Price	Award	Complete
Porpoise....	1300-ton Sub.	$3,400,000	8/3/33	Feb. 1936
Pike.....	1300-ton Sub.	3,400,000	8/3/33	May 1936
Perch.....	Submarine	.....	8/22/34	.....
Pickerel....	Submarine	.....	8/22/34	.....

Navy Yard, Boston

MacDonough	Destroyer	$2,500,000	.....	Mar. 1935
Monagham...	Destroyer	.....	.....	May 1935
Case.....	Destroyer	3,500,000	8/3/33	Feb. 1936
Conyngham..	Destroyer	3,500,000	8/3/33	May 1936
DD 389.....	L. Destroyer	.....	8/22/34	Nov. 1936
DD 390.....	L. Destroyer	.....	8/22/34	Feb. 1937

Navy Yard, Charleston, S. C.

Charleston.	Gunboat	$1,500,000	8/3/33	Feb. 1936

Navy Yard, Norfolk, Va.

Name	Type	Price	Award	Complete
Tucker.....	Destroyer	$3,500,000	8/3/33	Feb. 1936
Downes.....	Destroyer	3,500,000	8/3/33	May 1936
Unknown....	L. Destroyer	.....	8/22/34	.....
Unknown....	L. Destroyer	.....	8/22/34	.....
Unknown....	L. Destroyer	.....	8/22/34	.....

Navy Yard, Puget Sound

Cushing.....	Destroyer	$3,500,000	8/3/33	Nov. 1935
Perkins.....	Destroyer	3,500,000	8/3/33	Feb. 1936
Unknown....	L. Destroyer	.....	8/22/34	.....
Unknown....	L. Destroyer	.....	8/22/34	.....

Navy Yard, Mare Island

Smith.....	Destroyer	$3,500,000	8/3/33	Feb. 1936
Preston.....	Destroyer	3,500,000	8/3/33	May 1936
DD 391.....	L. Destroyer	.....	8/22/34	Nov. 1936
Pompano....	Submarine	.....	8/22/34	May 1937

Note: In some instances the completion dates have been estimated on the basis of the elapsed time called for in the bids or estimates.
Key to abbreviations used: H. Cruiser—Heavy Cruiser; L. Cruiser—Light Cruiser; Des.—Destroyer.

British Yard Completes Sloop for Portugal

ON JAN. 31, R. & W. Hawthorn, Leslie & Co. Ltd., Hebburn-on-Tyne, England, delivered to representatives of the Portuguese government the trim looking warship shown in the accompanying illustration, the first class sloop Afonso de Albuquerque. This vessel was laid down on May 24, 1933 and launched on May 28, 1934. This is the third vessel by the same shipbuilder for the Portuguese government and a sister vessel Bartolomeu Dias is now being completed.

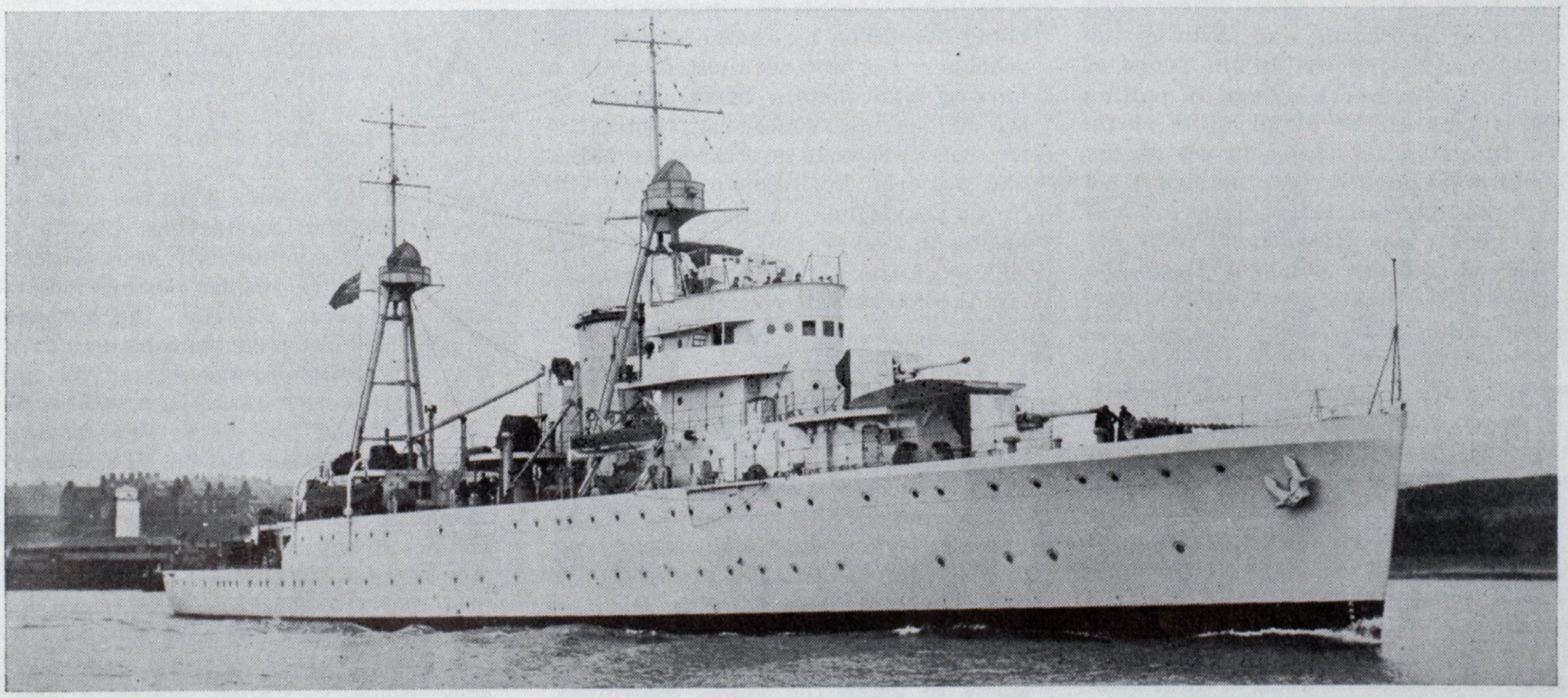
Dimensions of the Afonso de Albuquerque are: Length overall, 338 feet, 6 inches; breadth extreme, 43 feet; and depth to upper deck, 20 feet, 3 inches. The propelling machinery constructed at the St. Peter's Engine Works of the company consists of a twin screw arrangement of Parson's type, geared turbines, designed for economical steaming at cruising powers. Steam is supplied by two watertube boilers of 3-drum small tube type designed for a working pressure of 300 pounds per square inch. The boilers are fitted in separate watertight compartments, each with its self-contained oil fuel burning installation. Electric power is provided by several steam and diesel-driven generating sets.

Mechanical Ventilation

Three separate refrigerating plants, all inter-connected, are installed for refrigerated stores and magazine cooling. Maximum ventilation and light is provided for crew's quarters located forward. Special quarters for the fleet commander are located in a separate deck house at the aft end of the forecastle deck. The wardroom is on the upper deck aft and the captain's and officers quarters are situated on the lower deck, immediately below.

Main armament, supplied by Vickers Armstrong Ltd., consists of four 120-millimeter guns, two of which are super-imposed. Anti-aircraft armament consists of two 76-millimeter guns and four 40-millimeter pom-poms. Two depth charge throwers are fitted on the upper deck in the waist of the vessel. She is also arranged as a minelayer and carries 40 mines. A seaplane can be carried on the forecastle deck and the necessary gear has been installed for launching and recovering such a plane.

The latest type of wireless telegraph equipment has been installed, including special apparatus for communication with aircraft. Among the numerous items of equipment are gyro compasses, electric submerged log, echo sounding gear and submarine fog signal and reception ear.



First class sloop, Afonso de Albuquerque, built by R. & W. Hawthorn, Leslie & Co. Ltd. for Portuguese government

Late Decisions in Maritime Law

Legal Tips for Shipowners and Officers

Specially Compiled for Marine Review
By Harry Bowne Skillman
Attorney at Law

ABSENCE of a lookout is not material, it was declared in the case of WYOMISSING, 72 F. (2d) 834, where the presence of one would not have availed to prevent a collision. This pronouncement conforms to the principle of article 29 of the inland rules for preventing collisions in respect to neglect of proper precautions, the rule providing that nothing in the rules shall exonerate any vessel from the consequences of any neglect to keep a proper lookout.

* * *

EVEN though custom entitled passing vessels to pass starboard to starboard and to disregard rules requiring different action, such custom did not apply to vessels on crossing courses, the custom referred to seemingly being limited to hawser tows, it was declared in the case of LEXINGTON, 8 Fed. Supp. 417. Where a steamer was lawfully positioned when a tug towing a carfloat came in sight on crossing courses and the steamer assented to the tug's request for permission to cross the steamer's bow and to pass starboard to starboard, but a collision resulted, the tug and not the steamer was at fault.

* * *

WHERE the inference from evidence was that the bringing of a pistol aboard ship as part of the chief officer's equipment was left to the discretion of the chief officer, such officer in possessing and cleaning the pistol was acting within the scope of his duties; and such officer, in pulling the trigger of the pistol while cleaning it, without looking to see if the pistol were loaded, was negligent, so that the chief engineer, injured when the pistol was discharged, was entitled to recover damages from the shipowners—Stratton v. United States, 8 Fed. Supp. 429.

* * *

THE duty to mark a sunken wreck imposed by federal statute is solely upon the owner of the sunken vessel, it was pointed out in CORNELL No. 20, 8 Fed. Supp. 431. Apart from this special obligation imposed upon the owner, if the owner fails to mark it and the wreck is a danger to vessels using or entering a wharf, and the wharfinger is aware of the danger to vessels invited to come to its dock, it owes such vessels the obligation to either remove the temporary obstruction or to reasonably warn them so that the danger may be avoided. The obligation of the wharfinger is not limited to the area of the land under water actually owned by it. The wharfinger assumes a broader responsibility. It impliedly represents to the master of a vessel who is induced to bring his vessel to its wharf that the berth and immediate access to it are reasonably safe for the vessel. In this case it was held that placing of a small red lantern on the end of a pier was an inadequate warning of a sunken wreck at the entrance to the slip.

* * *

FACT that a sailing schooner had only two men in her crew, which could not be divided into two watches, as required by federal statute, did not defeat recovery for loss of the vessel in collision with a submarine, where a good lookout, active in the performance of his duties, was stationed at the bow, the submarine was sighted and reported, and the lights on the schooner were observed and reported on frequently; nothing more could have been done even if there had been more men on deck, said the court in the case of Black v. United States, & Fed. Supp. 443. The schooner, being a privileged vessel, was required to hold her course and speed, and was within her rights in doing so, at least until a collision was plainly imminent. Not being overtaken by another vessel, the schooner was not required to show a flare-up light before being struck by the submarine, which the captain of the schooner had no reason to think had not seen his lights until too late to do anything. A submarine, preparing to anchor, must keep out of the way of a sailing schooner approaching the anchorage ground.

* * *

MASTER'S fault in allowing a steamer to strike a pier so violently as to open a drainpipe, which had not been inspected for over three years, was held chargeable to the ship and her owners in the case of HARRY LUCKENBACH, 8 Fed. Supp. 507, and they were not entitled to the benefit of provisions in bills of lading and federal statute relieving them from liability, if the owners exercised due diligence to make the vessel seaworthy. Nothing said in the bills of lading relieving the vessel from damage by water can affect responsibility for negligence, if once established as an efficient cause of injury.

* * *

WHERE a seaman's action is based solely on the charge of negligence, the burden of proof is upon him to establish with reasonable certainty that he was injured in substantially the manner claimed; that is by a breach of duty owed by the shipowner to him in respect of the place where he was injured; and that in whole or in part, his injuries resulted proximately therefrom. The shipowner is obligated to provide reasonable safe equipment for the seaman, and it was a breach of that duty to him to permit a chain railing on the outer edge of a deck to remain slack—Helmke v. United States, 8 Fed. Supp. 521.

* * *

WHERE vessels are equally at fault in a collision because of faulty navigation and one carrying cargo is not liable for the loss of cargo because of the Harter act, its owner in the capacity of bailee of the cargo may recover the entire value of the cargo from the non-carrier, and the latter may recoup one-half of this amount by adding the amount paid for cargo to its other damages—GRECIAN, 8 Fed. Supp. 580.

* * *

A STEAMER is prima facie liable for a collision with a sailing vessel and can only relieve herself by showing that the accident was inevitable or caused by the culpable negligence of the other. It is the duty of every steamer navigating the thoroughfares of commerce to have a trustworthy lookout, besides the helmsman, and, in case of collision, the absence of such lookout is prima facie evidence that the collision was caused by the fault of the steamer. When acting as the officer of the deck, and having charge of the navigation, the master of a steamer is not a proper lookout. Proper lookouts are persons other than officers of the deck or helmsmen, and they should be stationed at the forward part of the vessel. The rule as to the position of the lookout applies in the case of submarines or other naval vessels—Black v. United States, 8 Fed. Supp. 443.

Marine Business Statistics Condensed

Record of Traffic at Principal American Ports for Past Year

New York

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
February, 1935	232	1,367,210	269	1,505,268
January	277	1,602,975	300	1,649,284
December, 1934	282	1,429,129	267	1,409,462
November	280	1,356,331	306	1,475,818
October	290	1,555,651	284	1,539,537
September	271	1,645,919	284	1,624,272
August	296	1,815,221	332	1,859,966
July	313	1,686,825	295	1,574,395
June	239	1,696,804	324	1,785,815
May	291	1,597,233	316	1,662,711

Philadelphia

(Including Chester, Wilmington and the whole Philadelphia port district)

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
February, 1935	38	109,838	42	132,717
January	43	131,730	41	122,204
December, 1934	62	184,844	47	136,559
November	58	156,483	56	130,800
October	55	143,330	56	146,265
September	52	143,092	44	115,845
August	56	151,501	41	120,875
July	48	125,616	35	89,902
June	61	191,042	53	155,308
May	58	169,719	50	143,652

Boston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
February, 1935	79	281,072	51	176,760
January	88	308,292	51	191,279
December, 1934	91	309,706	59	211,394
November	92	287,743	55	205,590
October	93	339,602	63	234,302
September	110	362.773	75	238,557
August	129	377,219	106	363,789
July	136	374,494	112	392,586
June	125	337,627	105	316,594
May	105	301,785	82	245,571
April	86	309,725	58	227,404

Portland, Me.

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
February, 1935	11	23,834	12	27,693
January	12	31,676	10	25,804
December, 1934	12	24,738	16	37,026
November	21	41,916	19	34,399
October	19	34,735	17	28,611
September	16	35,064	15	34,285
August	23	31,559	21	31,672
July	14	27,034	12	26,525
June	15	30,296	16	43,232
May	15	27,376	15	32,378

Providence

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
February, 1935	3	15,085	4	19,642
January	2	6,682	4	12,832
December, 1934	1	2,316	3	10,988
November	4	9,158	2	2,192
October	3	11,084	1	1,901
September	4	13,022	2	8,628
August	7	12,240	5	11,809
July	4	11,634	4	17,821
June	8	14,773	4	4,887
May	3	4,985	1	2,022

Portland, Oreg.

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
February, 1935	29	110,749	45	175,091
January	34	126,730	45	159,415
December, 1934	27	107,555	49	185,192
November	32	129,510	44	165,914
October	27	104,387	47	182,669
September	22	83,223	41	147,290
August	30	119,182	49	194,079
July	12	46,946	11	39,730
June	10	34,726	1	2,298
May	11	41,765	17	58,993
April	31	117,094	42	157,954

Baltimore

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
February, 1935	85	267,417	92	291,094
January	86	276,468	88	286,810
December, 1934	97	299,281	95	309,991
November	88	271,778	94	288,109
October	96	282,930	100	308,916
September	91	276,111	93	284,297
August	92	278,812	96	280,641
July	108	319,702	106	317,583
June	108	339,280	112	356,445
May	104	329,312	107	328,998
April	102	300,396	108	334,583

Norfolk and Newport News

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
February, 1935	12	41,103	46	111,352
January	25	99,056	51	121,578
December, 1934	29	70,494	45	116,786
November	32	121,636	45	113,181
October	28	83,089	41	102,699
September	26	67,068	44	107,698
August	21	111,553	37	113,616
July	25	76,320	33	91,111
June	39	91,293	57	127,068
May	31	71,706	50	103,737
April	21	65,701	47	125,291

Jacksonville

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
February, 1935	9	14,722	12	23,360
January	5	12,273	10	30,335
December, 1934	7	7,116	15	33,473
November	20	29,468	13	25,052
October	13	22,913	17	32,357
September	18	21,329	18	24,657
August	20	25,558	21	37,676
July	18	16,470	16	18,145
June	16	21,226	18	30,898
May	14	13,340	22	38,824

Key West

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
February, 1935	24	25,522	24	28,698
January	23	27,332	24	27,651
December, 1934	23	33,454	24	33,915
November	24	30,272	27	32,493
October	26	26,491	25	26,899
September	21	23,268	21	23,282
August	23	24,392	24	24,706
July	25	24,469	25	25,564
June	28	33,701	25	32,548
May	40	57,180	42	58,094

Mobile

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
February, 1935	104	229,378	107	242,498
January	104	270,423	101	241,901
December, 1934	95	203,188	90	196,487
November	89	201,492	95	222,543
October	109	278,352	107	266,966
September	102	228,304	115	260,544
August	108	256,663	101	237,852
July	102	221,011	99	225,308
June	119	254,040	115	237,054
May	115	255,503	114	253,294

Seattle

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
February, 1935	48	211,876	47	203,927
January	56	212,386	63	249,805
December, 1934	51	222,427	47	201,642
November	46	185,293	48	205,795
October	54	230,438	55	222,014
September	45	184,361	43	221,241
August	43	176,644	54	223,038
July	24	93,558	20	82,646
June	16	73,128	12	52,309
May	22	103,441	19	86,295

New Orleans

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
February, 1935	166	457,420	165	439,990
January	166	457,267	166	435,232
December, 1934	172	472,463	174	477,672
November	157	431,288	157	430,060
October	175	499,832	177	492,802
September	159	453,453	157	426,341
August	145	385,557	154	403,163
July	156	439,297	154	423,642
June	141	300,349	151	416,734
May	167	482,123	152	421,839
April	169	487,655	170	475,121

Charleston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
February, 1935	41	113,961	42	107,795
January	51	147,056	43	125,398
December, 1934	33	90,493	29	78,188
November	43	128,750	39	112,755
October	47	165,814	37	105,739
September	35	102,325	28	80,390
August	32	97,695	36	97,663
July	41	99,233	34	81,362
June	36	95,072	31	81,094
May	36	98,475	23	69,764
April	38	101,315	34	96,705

Galveston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
February, 1935	19	44,797	57	170,444
January	15	29,620	58	166,087
December, 1934	20	29,298	58	157,843
November	22	43,980	71	255,378
October	16	29,015	70	207,637
August	12	21,967	55	160,727
July	21	33,508	60	163,282
June	25	57,920	71	215,594
May	21	34,457	56	141,885
April	27	50,294	82	219,283

Los Angeles

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
February, 1935	203	782,886	196	788,189
January	199	773,531	196	771,662
December, 1934	239	899,269	222	882,697
November	226	870,032	210	878,186
October	225	856,732	203	825,348
September	214	804,221	197	791,324
August	218	801,482	201	785,671
July	198	710,210	186	755,686
June	201	743,198	186	738,880
May	200	754,695	197	738,307

San Francisco

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
February, 1935	100	609,987	164	669,680
January	142	638,652	162	672,411
December, 1934	152	659,210	154	628,137
November	151	664,456	175	733,150
October	152	670,992	156	663,353
September	146	614,180	160	675,941
August	160	699,105	178	781,553
July	118	484,655	119	471,702
June	126	386,966	110	456,027
May	152	452,827	140	593,715

Houston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
December, 1934	45	159,040	47	166,241
November,	39	143,055	39	139,616
October	43	145,461	41	139,418
September	49	169,676	49	170,694
August	19	76,104	22	88,631
July	24	93,810	24	86,702
June	27	115,730	33	133,108
May	29	109,223	45	132,318
April	31	121,318	40	155,327
March	23	89,200	39	144,546

Note: At the port of Philadelphia, additional vessels in the foreign trade (via other American ports) were 64 of 203,125 net tons entered and 77 of 252,142 net tons cleared for the month of February. Similarly at Norfolk and Newport News 97 vessels of 289,005 net tons entered and 69 vessels of 224,052 net tons cleared during February in foreign trade via other American ports.

Latest Data on New Marine Work

Information on New Ships Ordered—Building and Repair Contracts Let—Sales—Reconditioning—Launchings—Trial Trips

ANNOUNCEMENT was made on March 1 by J. C. Peacock, director of the shipping board bureau, that the American South African Line Inc., New York, has made preliminary application for a loan from the construction loan fund to cover three-fourths of the cost of building a new vessel similar in type to the company's motorship CITY OF NEW YORK. The amount of the loan has been estimated at approximately $1,650,000.

Until March 15, the shipping board bureau, following its usual practice invited the receipt of statements pertinent to this application. As this is written no definite action on award had been taken.

Radio Equipment Ordered

Complete radio equipment is being supplied by the Mackay Radio Telegraph Co., for the two new Socony-Vacuum Oil Co. tankers, SOCONY-VACUUM and MAGNOLIA. The installations include Mackay Radio's combination intermediate and short-wave transmitters with receivers, the emergency radio set which operates independently out of the power supply of the vessel and Kolster radio direction finder. Five vessels of the Socony-Vacuum fleet are now carrying Mackay radio equipment.

Another installation recently made by Mackay Radio is on the steamship ACHILLES. The ACHILLES is now being reconditioned for Boland & Cornelius, Buffalo, at the Baltimore plant of the Bethlehem Shipbuilding Corp. Ltd. An item on this conversion was published in the January MARINE REVIEW.

The radio installation on the ACHILLES is of the latest Mackay type and the direction finder is a recent development and is one of the first of its type to be placed in service.

Diesel Electric Tug

It is understood that the United States Engineer office, Portland, Oreg., will advertise for bids in the near future on a steel hull, diesel electric tug and survey vessel.

This vessel is to be 117 feet in length, 25 feet in beam, and 11 feet in depth. The propelling machinery which is to be diesel electric will develop a total of about 720 horsepower applied to the propulsion motor. This power will probably be generated in two diesel engine driven generating sets, the engines being each of approximately 450 horsepower. The vessel is intended for use in the service of the United States engineers on the Columbia river.

Bids for Reconditioning

According to word received from the office of George G. Sharp, naval architect, New York, bids were to be opened on March 8 at offices of the American Scantic line, 5 Broadway, New York, on both specifications "A" and "B" for the renovation and rebuilding of two Hog Island type ships for the American Caribbean Line Inc. Accommodations, it is understood, are to be provided on each vessel for from 150 to 175 passengers. The results of the bids had not been announced as this is written.

The line in which the vessels are to serve was recently organized by Moore, & McCormack Co. for trade to the West Indies.

The United States engineer office, St. Louis, has awarded contract for the construction of five Western river type boilers for dredge SELMA to the Murray Iron Works, Burlington, Iowa, on its bid of $6569 received Feb. 15.

The same office has also awarded contract for a 32-inch pipe line dredge pump to the Union Steel Casting Corp., Pittsburgh, Pa., on its bid of $5761.03, received Feb. 25.

Rebuilding Ferry Peralta

Under supervision of James E. Murphy, marine superintendent of the Puget Sound Navigation Co., Seattle, work is progressing on re-engineering and remodeling the steel hull ferry PERALTA for service on the 16-mile run between Seattle and the Puget sound navy yard. No contract has been awarded for the work which is underway at the plant of the Lake Washington Shipyards.

The 3000-horsepower Busch Sulzer diesel engine has been installed and rebuilding of the superstructure will be undertaken shortly, it is stated. The upper works will be of steel. The PERALTA, formerly a San Francisco bay ferry, was damaged by fire and later towed to Seattle by her present owner who will use her as a day-light passenger and automobile ferry.

The merchant marine committee of the house of representatives is being urged to give prompt approval for the construction of additional ice breakers for the coast guard service. It is assumed that if appropriations are made available that the design and construction department of the United States coast guard will be ready to call for bids promptly.

Steel Dump Scows

Bids were received by the United States engineer office, Milwaukee on March 13 for the construction of two 225-cubic yards steel dump scows complete with machinery and fittings and including delivery afloat at Grand Haven Harbor, Mich.

The bids were: Manitowoc Shipbuilding Corp., $71,840; Dravo Contracting Co., 74,450; Chas. Hegewald Corp., $93,918; Federal Construction Co., $72,600; Milwaukee Bridge Co., $80,250; McClintic-Marshall Corp., $62,500; Chicago Shipbuilding Co., $110,250; and Sturgeon Bay Shipbuilding & Dry Dock Co., $80,885.

No notice of award had been made as this is written.

Bids for Building Tug

Bids were received by the United States engineer office, Philadelphia, on March 6 for the construction of one 50-foot steel motor driven tug. The lowest bid, adjusted on the basis of time of completion at $25 per calendar day in excess of 130 calendar days, the shortest period of time offered for completion, was $33,833, from the Spedden Shipbuilding Co., Baltimore, using a Kahlenberg engine. The next lowest bid on the same basis was $33,992, using the same engine, from Jakobson & Peterson, New York.

Recommendation for award to the Spedden Shipbuilding Co. was made to the chief of engineers. Award of contract will not be made until the approval of the chief of engineers has been received.

It is understood that the Gulf Refining Co. is asking for bids on two large tankers. Details have not been announced.

United States Lines Will Build Ocean Liner

The good news has come from Secretary Roper that a contract was executed on March 19 under which the United States Lines Co. agrees to construct a third sister ship to the MANHATTAN and WASHINGTON and is permitted to withdraw the 21-year old LEVIATHAN from active service.

The contract provides for the payment of $500,000 by the company to the government as additional consideration for the waiver of the government's right, under an earlier contract, to require the continued operation of the LEVIATHAN during the seasons of 1935 and 1936. It also requires the company to continue to maintain the hull and machinery of the LEVIATHAN in good repair until December, 1936.

The immediate construction of the new vessel is further guaranteed by a provision for the payment to the government of an additional $1,000,000 as liquidated damages if the contract for construction of the new vessel is not awarded within six months unless that time is extended by the secretary of commerce.

The contract contemplates the possibility of enactment of new legislation providing for government assumption of the excess cost of construction in this country as compared with that in foreign shipyards. It expressly provides that no construction loans shall be made by the government unless congress adjourns without enacting the new legislation recommended by the President in his message of March 4.

The MANHATTAN, completed in 1932, and the WASHINGTON, completed in 1933, are two of the most popular and successful passenger ships afloat today. They are sisterships. The WASHINGTON, which has accommodations for 1087 passengers, is a twin screw steel vessel, 705 feet, 3 inches in length over all; with a beam of 86 feet. Equipped with two sets of triple series, single reduction geared turbines, she has a speed of 20 knots and a cruising radius of 10,500 miles. Oil is used for fuel. The ship has four decks, her gross tonnage is 24,289, and she has a maximum draft of 30 feet, 9 inches and is fully equipped with the most modern safety devices. The MANHATTAN is identical except in minor details.

The Roosevelt-International Mercantile Marine Co., owner of United States Lines, will proceed promptly with the laying of the keel of the new liner. Plans prepared by Gibbs & Cox, naval architects, New York, are said to be complete and it is expected that bids will soon be invited for the construction of the new vessel. It is anticipated that the new liner will be somewhat larger (about 30,000 gross tons) and faster than the MANHATTAN and WASHINGTON. A speed of 24 knots has been mentioned.

Basil Harris, vice president of the owning company, said:

"Speaking for our own company and for all American shipping interests, we cannot but feel that this is a very forward and progressive step in the further upbuilding of the American merchant marine. It would seem also to mark a very definite step in the government's determination to lend its full support to meet the highly competitive foreign inroads to our commerce.

"The decision to go ahead with the building of this new vessel comes at a most psychological time. It is, so to speak, the initial answer of our government to the challenge that comes to the American merchant marine through the building of new ships by France and England.

"The announcement from Washington prompts the hope that the new American liner is to be but the first of a number of equally modern vessels to be added to our merchant marine in the next few years. It is the purpose of our company to lay the keel of the new ship with all possible speed.

"Sight should not be lost of the fact that the major portion of the money employed in the construction goes to wages. Once work has been begun on the ship it means the steady employment of approximately 2500 men for at least two years."

Extensive Elevator System On Liner Queen Mary

Facilities for vertical transportation as elaborate as those found in the greatest metropolitan sky scraper are being provided for the Cunard White Star superliner QUEEN MARY. A contract for 20 of the most modern type elevators for the gigantic liner has been awarded to the Waygood-Otis Co., British affiliate of the Otis Elevator Co.

Sea-going elevators differ in several ways from those used in office buildings. Their design and construction is much more difficult. They are provided with special safeguards to permit operation when the ship rolls and pitches. Provision must also be made to protect the mechanism against the damp, salt atmosphere of the sea.

The elevators for the QUEEN MARY may be operated on auxiliary motors receiving power from the emergency supply in case of interruption to the main electrical supply. All of the elevators are identical and have interchangeable parts so that only a small supply of spare parts is necessary.

Of the 20 elevators, seven will be for first class accommodation. Each of these will have a capacity of 1800 pounds at a speed of 200 feet per minute, with car switch control and with rises ranging from 27 feet to 50 feet. Tourist accommodations will have two elevators with the same capacity and speed, and with arrangements at three floors for special push-button control. There are two elevators for third class accommodations.

In addition there will be two baggage elevators with a capacity of 2240 pounds at 100 feet per minute; two man-carrying service lifts with 1200 pounds capacity and 200 feet speed; and three stores elevators of the same capacity as those for baggage and with push-button control. There will also be an engineer's elevator with the same capacity and speed as the main passenger elevators. A special elevator will be installed for engine room stores.

Bunker Prices

At New York

	Coal F. a. s. per ton	Fuel oil alongside per barrel	Diesel engine oil alongside per gallon
Mar. 19, 1934	5.63@5.38	1.20	4.65
Feb. 19	5.63@5.38	1.20	4.65
Jan. 19	5.63@5.38	1.20	4.65
Dec. 19	5.63@5.38	1.20	4.65
Nov. 19	5.63@5.48	1.20	4.65
Oct. 19	5.63@5.48	1.20	4.65
Sept. 19	5.63@5.48	1.35	4.79
Aug. 18	5.63@5.48	1.35	4.79
July 19	5.63@5.48	1.35	4.79
June 19	5.63@5.48	1.35	4.79
May 18	5.63@5.48	1.35	4.79
April 19, 1934	5.63@5.48	1.35	4.79

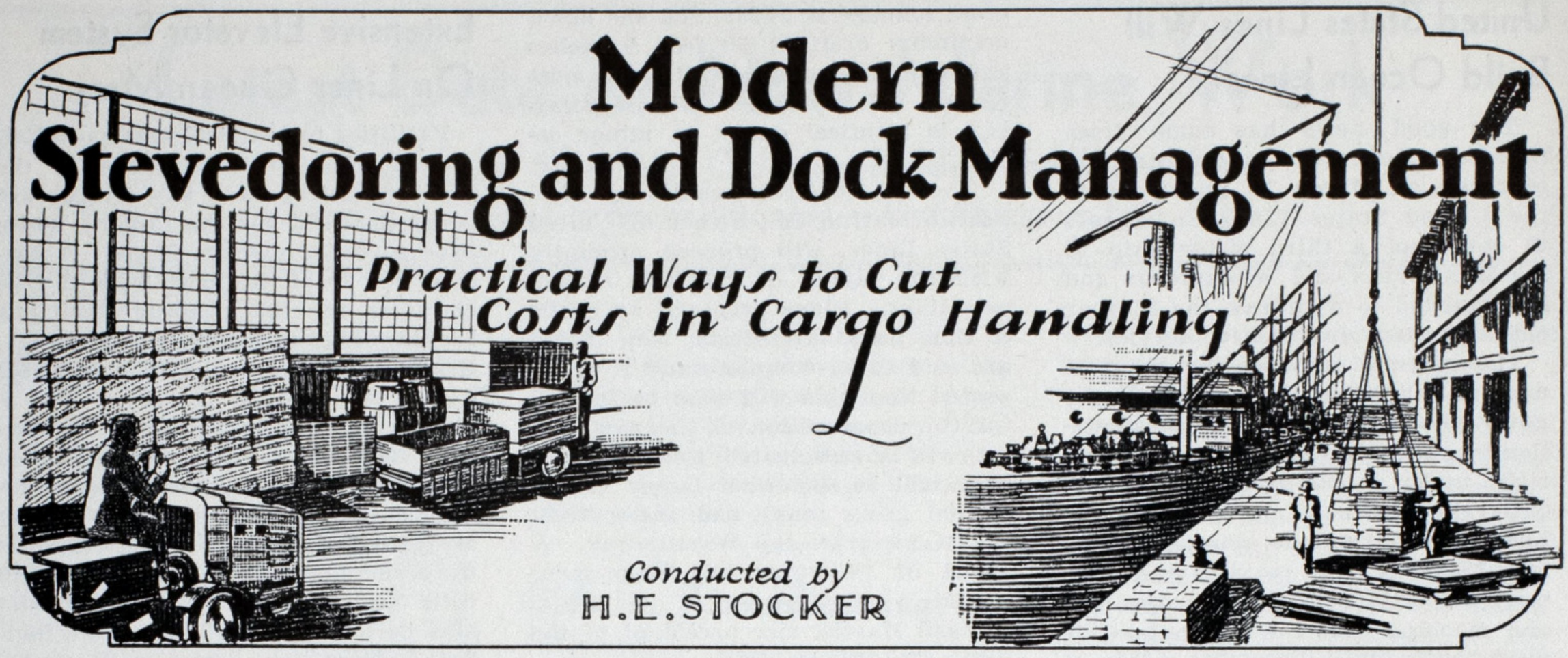
At Philadelphia

	Coal trim in bulk per ton	Fuel oil alongside per barrel	Diesel engine oil alongside per gallon
Mar. 19, 1935	4.93@4.68	1.20	4.61
Feb. 19	4.93@4.68	1.20	4.61
Jan. 19	4.93@4.68	1.20	4.61
Dec. 19	4.93@4.68	1.20	4.61
Nov. 19	4.93@4.78	1.20	4.61
Oct. 19,	4.93@4.78	1.20	4.61
Sept. 19	4.93@4.78	1.35	4.76
Aug. 18	4.93@4.78	1.35	4.76
July 19	4.93@4.78	1.35	4.76
June 19	4.93@4.78	1.35	4.76
May 18	4.93@4.78	1.35	4.76
April 19, 1934	4.93@4.78	1.35	4.76

Other Ports

Mar. 19, 1935

Boston, coal, per ton	$8.25
Boston, oil, f. a. s. per barrel	$1.14
Hampton Roads, coal, per ton, f.o.b. piers	$4.75
Cardiff, coal, per ton	13s 6d
London, coal, per ton	—s —d
Antwerp, coal, per ton	15s 9d
Antwerp, Fuel oil, per ton	—s —d
Antwerp, Diesel oil, per ton	—s —d
British ports, Fuel oil	—s —d
British ports, Diesel oil	—s —d



Obsolescent Equipment and Methods Increase Cargo Handling Costs

By H. E. Stocker

A NUMBER of principles underlying freight handling, formulated by the author have been discussed in previous issues. In this article consideration will be given to two additional principles.

Economy in freight handling is obtained by replacing equipment and methods whenever the cost of the replacement is less than the savings obtained in two years or less due to greater efficiency. This may be designated as the principle of obsolescence.

The truth of this principle has been demonstrated in many instances on marine terminals. The principle of obsolescence is applied to the greatest advantage only when obsolete equipment is replaced by the most economical equipment available. If two wheel hand trucks are supplanted with skids and lift trucks, a step toward the most economical method has been made and the new equipment may pay for itself in less than two years. However, skids and lift trucks are not necessarily the most effective equipment for a general cargo terminal and if this is so the skid and lift trucks become obsolete. Tractors and trailers, for instance, would reduce costs below those using skids and lift trucks, by an amount sufficient to pay for the equipment in less than two years.

It must be remembered that the principle of obsolescence applies not only to mechanical equipment but to every phase of freight handling. Even the method of piling freight on a pallet, the manner of stowage in the ship, are examples of methods which may have become obsolete.

Importance of New Ideas

Changes are constantly occurring in equipment and methods so that to have the most economical operation, an organization must be on the alert constantly for new ideas.

This is more than a matter of keeping an open mind, reading articles in the trade press and talking with others doing the same character of work. It is necessary to have adequately organized *new idea facilities* and to aggressively search for more economical means of performing an operation. Unless a terminal operator goes after new ideas aggressively, his operation will soon become obsolete in whole or in part, although he may think his methods and equipment are modern and entirely up-to-date. Not being alert to progress in terminal operations, he will be losing a few hundreds, a few thousands, or many thousands of dollars each year, dollars which could be saved and expended in profitable ways.

The present ideal method for general cargo operations is a combination of pallets, fork trucks, tractors and trailers. This method is used successfully in many operations and it is the method which should be aimed at by many other stevedores and terminal operators.

This method applies the fundamental principles of freight handling more completely than any other. A large handling unit is created when the freight is received and the cargo remains on pallets until it is delivered, an application of the handling principle.

The handling of these large units is performed by fork trucks, illustrating the application of the mechanical equipment and the terminal time principles. The fork trucks are used for loading pallets on to trailers for the longer hauls. The greatest economy of the tractor trailer method is on long hauls and for such hauls skids and lift trucks, pallets and fork trucks and other single load unit equipment are the least economical.

Efficient Equipment

When the tractors and trailers are thoroughly modern in every detail, they illustrate the application of the principle, that productivity of equipment is increased by providing good floors, automatic couplers, non-friction bearings, rubber tires and equipment best suited to conditions.

Economy of mechanical equipment is determined by performance value measured by comparative costs per ton handled. Neither original cost, less depreciation, reproduction value, nor salvage value, measure value as it should be measured in determining the purchase of cargo handling equipment. Cargo handling is the only function of cargo handling equipment and its only true measure of value is its ability to do that job economically.

The author has found that on many marine terminals, equipment

is retained because, mechanically, it functioned satisfactorily but the true function of the equipment was overlooked. The operators keep the equipment in use because it works mechanically but they fail to realize that the equipment fails to work *economically* because another type of equipment could perform the same work at a less cost per ton. Equipment is acquired to perform cargo handling economically, and not because it is a fine example of mechanical engineering.

The manner of financing equipment is found frequently to be the controlling factor where the operator knows his present methods and equipment are obsolete. This point was covered in a part of the author's paper presented at the 1933 meeting of the Society of Naval Architects and Marine Engineers, and the statement applies just as much to equipment and methods on the terminal as it does to the cargo handling equipment of a ship. Because there are so many operations that are obsolete in one respect or another, the statement in part is quoted below:

Knowledge and Profit

"A shipping executive may understand the principles of profitable ship operation, and possess a vast store of knowledge of methods and equipment, yet he may not be able to translate this knowledge into profit because of a lack of finances, and the opposition of the higher executive of the company.

"The objection is often raised that the purchase of modern equipment cannot be financed. This recalls the statement of Wellington in his book "*Economies of Railway Location*," that energetic managements find ways to finance equipment which will reduce costs.

"It is very costly to postpone possible savings. An energetic, well informed management is constantly on the alert to find ways and means of financing improvements to cut costs.

"An improvement costing $10,000 which will save $10,000 a year, will produce a net saving of $40,000 in five years. If the improvement is delayed two years by a false point of view, lack of means of financing the improvement, or organization friction, the net saving in five years is reduced to $20,000.

"It is possible to tabulate wasted opportunities, amounting to millions of dollars, using only cases where improvements for more economical cargo handling were made after delays of two to six years.

"This is a poor time to finance improvements by increasing capital expenditures by means of loans, or sale of stocks and bonds; it is a very good time to increase capital expenditures by transferring expenditures from operating costs to expenditures for the more economical handling of cargo. When the cost of improvement is liquidated, that which was formerly a portion of operating cost may be transferred to profits.

"The problem of financing cargo handling equipment then becomes primarily one of transition financing. When the problem is to finance tractors and trailers, pallet and fork trucks, etc., it is possible that an energetic management of any except a bankrupt or near bankrupt company may find a way to finance these improvements which will pay for themselves within a short time—six months, a year, eighteen months, or even two years, depending upon the state of finances of the company and the savings resulting from the improvement.

Responsibility of Management

"The number of terminals with obsolete cargo handling gear in 1928 and 1929 indicates that not lack of finances but lack of a progressive point of view and an energetic management is the principal cause of the slow progress in modernization of the cargo handling features of the ships.

"One line acquired equipment costing $35,000 without the outlay of a single cent. The equipment manufacturers placed the equipment on the terminal, taught the organization its most effective use, and accepted as payment the savings which resulted. In another case, a guarantee was made as to results. This guarantee was exceeded. In the first year of operation $70,000 was saved on an investment of $140,000.

"A financing plan is now being offered by a cargo handling consultant which provides that 20 per cent of the savings accrues to the shipping company and the balance is applied against the purchase price of the equipment.

"Improvements requiring financing with a shipping company's own funds may be difficult, because of the relations with the company's bankers. A line with a floating debt of $50,000 on which it is paying interest at 6 per cent, is spending $3000 yearly, while obsolete hatch covers may cause an excessive cargo handling cost of $6000. Therefore, twice as much would be saved by spending money on new equipment rather than on reducing the floating debt. Whether this can de done depends on whether the bank is more interested in getting the debt reduced than in financing cargo handling equipment.

"A broad visioned banking connection is a necessity to maximum profits, particularly at this time. A dollar invested now in reconditioning or modernizing will be worth more than a dollar five years from now, possibly because of rising prices and surely because savings effected will extend over a longer period. Clear headed bankers know this, and will finance improvements which the facts show will pay for themselves within a reasonable period, possibly up to two years.

"It is the function of shipping managements to convince the banker, with facts obtained by observation, analysis, and experiment, that the economies claimed will be realized within the period named."

Principles are fundamental to a thorough understanding of freight handling and the greatest economies are obtained by those who apply them intelligently.

American Bureau Should Continue Present Functions

Active opposition has developed to the possible replacement of the American Bureau of Shipping as the authority for the approval of plans and specifications for the building and repair of ships. The suggestion has been made that the proposed enlarged technical staff of the bureau of navigation and steamboat inspection, which is one of the provisions of the ship safety program, now being considered by congress, should assume the responsibility of approving such plans and specifications.

R. J. Baker, president of the American Steamship Owners' association, offered a substitute for the section of the measure referring to this matter. As amended by Mr. Baker, the section would read:

"The American Bureau of Shipping shall be authorized in respect of vessels classed or to be classed with the said bureau and in the case of unclassed vessels in accordance with the said approved plans and specifications and rules and regulations and the certificate of said bureau when said plans and specifications and rules and regulations have been complied with shall be accepted by the director as evidence of such compliance, subject to the right of the director to verify the correctness of the findings of the said bureau."

H. Gerrish Smith, president, National Council of American Shipbuilders informed the committee that the council had given close attention to this question since it vitally affects the design and building of ships and that therefore the council supported the amendment offered by Mr. Baker.

Some shipowners at the hearing suggested that this authority should apply to other recognized classification societies as well as to the American Bureau of Shipping. In addition to supporting the Baker amendment, J. Lewis Luckenbach, president of the American Bureau recommended that provision be made under which the bureau of navigation and steamboat inspection could set up a technical staff to review the recommendations made by the American Bureau. He pointed out that the American Bureau has nothing to do with insurance but deals with the construction of ships as to their strength characteristics.

Develops New System Welded Construction

BY R. D. MACMILLEN

A NEW diesel-propelled oil carrier for Studerus Oil Co. of New Jersey, the first vessel of its type, is now being built at the Crane-Twenty-seventh street plant of United Dry Docks, Inc., New York, to the highest class of the American Bureau of Shipping. With its completion, Johannes Kjekstad will have added a third, patented system of all-welded ship design to his truss-weld and reverse channel systems.

Free Flow Frame System

The "free flow frame system," as the new design is temporarily designated, achieves high structural efficiency, in inherent strength, flexibility and economy of material, as indicated by official tests made here and in Norway. The first tests were conducted last summer at the Staten Island plant of United Dry Docks, under the supervision of Messrs. Wilson and Walker of the American Bureau of Shipping. The results indicated that the new system has a 27 per cent higher structural efficiency against deflection and a 14 per cent less permanent set. Similar results were recently obtained by the Oslo Material Proveanstalt, a Norwegian testing institution, where a series of comparative tests showed that the free flow frame design is capable of sustaining a load 53 per cent greater than that sustained by a riveted frame of the same weight and a load 30 per cent greater than that sustained by an ordinary welded frame of like dimensions.

While the free flow frame system is well adapted to the construction of tankers and liquid cargo carriers generally, especially the larger hulls, its incorporation in any type vessel would seem to be fully justified by greater strength, lighter weight, and ease of maintenance, repairs, and cleaning or painting.

The new form of construction, according to the inventor, is "a system of 'open' framing in which the strength members are not directly attached to the shell plating, in the customary manner, but instead are so placed as to leave a space of some two inches between the outer edge of the frame and the shell. The effect of this 'open' framing is to increase the section modulus and the strength factors by placing the neutral axis of the frame shape at a greater distance from the shell plating; in other words, it operates to increase by so much the depth of the frames.

Saving in Weight

"When it is considered," the inventor continued, "that the weight of the frames, including beams and stiffeners, may represent as much as 30 to 50 per cent of the total weight of the hull, improvements in that part of the structure assume major proportions. Official tests, indicate that there may safely be a reduction of about 20 per cent in the weight of frames and stiffeners, when attached in the manner specified in the pending 'free flow frame' patents. This saving, of course, may be utilized either in heavier shell plating, in lower total weight, or in greater cargo capacity with the same displacement."

Greater strength and lighter weight, however, are but two of the important factors to commend the free flow frame design, Mr. Kjekstad pointed out: Valuable characteristics, from the production and maintenance points of view, also are disclosed by the tests conducted under American Bureau of Shipping supervision.

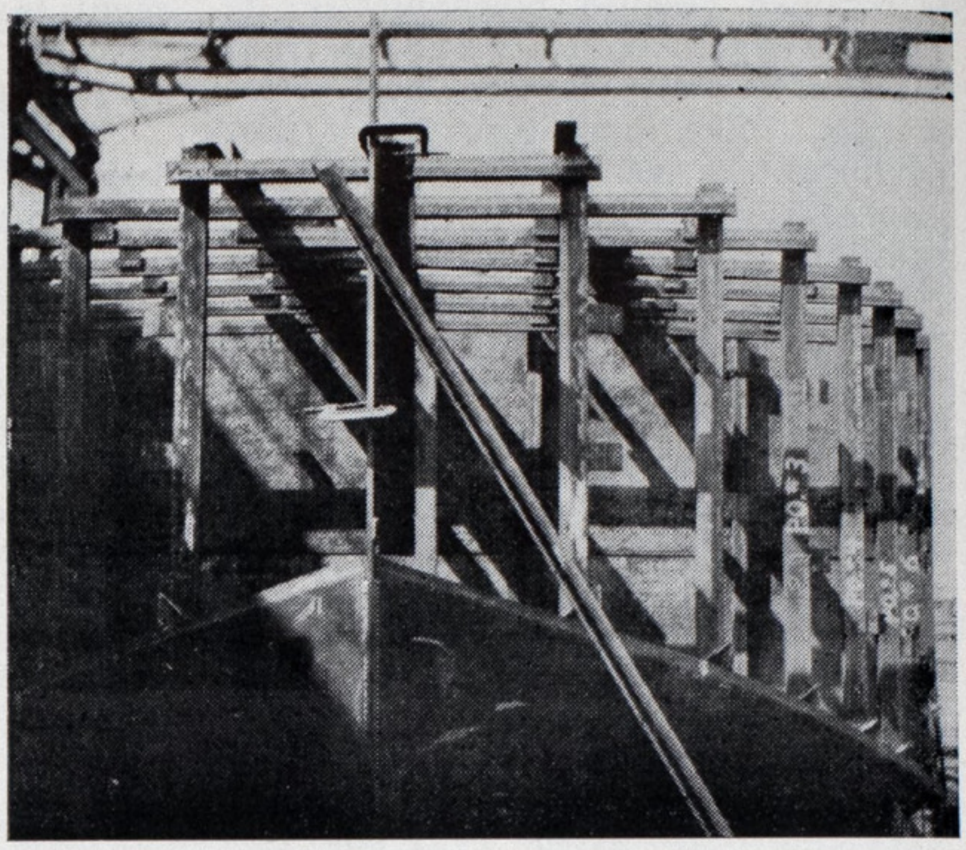
Obviously, detrimental stresses and distortions simply do not exist where the shell plating is heated hardly at all, because the welding area is confined to lugs, spaced at comparatively wide intervals. In the tests referred to above under American Bureau supervision the channel framing was two inches from plating and was connected to it by 4 x 4 x ½ inch T-bar clips spaced 24 inches between centers.

In the matter of maintenance, too, the benefits are of a practical and attractive kind. Unlike the ordinary framing, continuously attached to the shell, the free flow frame system offers no hiding place for corrosion to start, no gas pockets, no sludge panels, no place that may not be easily and thoroughly cleaned or painted.

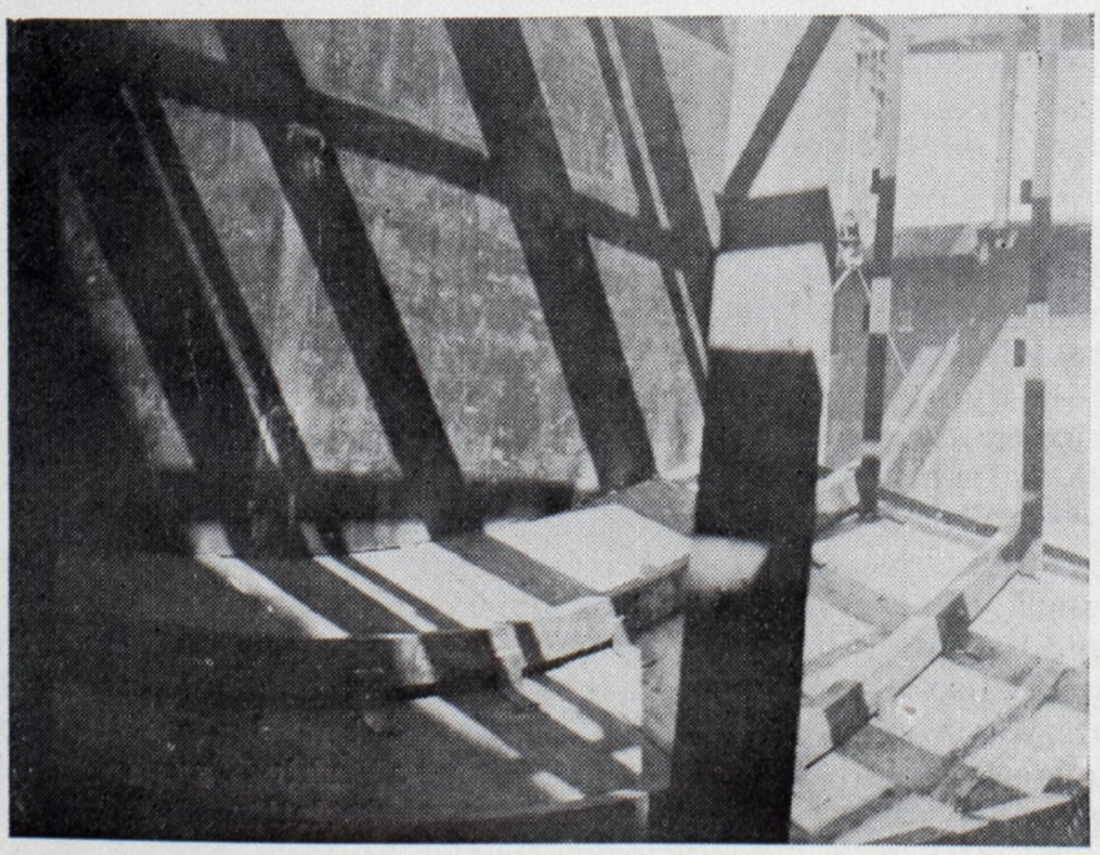
Easier to Repair

From the repair point of view, the free flow frame system affords distinct economies, it would seem: In the event of damage, either the plating or the framing may be repaired or removed, each without disturbing the other.

Details of the new design are shown to some extent in the accompanying illustrations of the bulk oil carrier under construction on this system for the Studerus Oil Co.

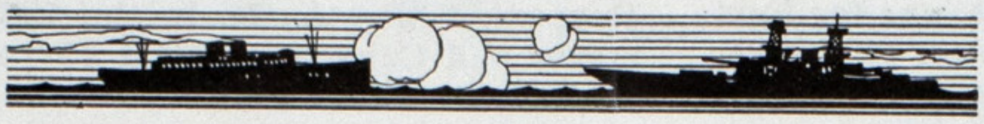


All-welded bulk oil carrier under construction on the new free flow frame system



Framing two inches from shell, secured to it by clips welded at intervals. Tanker building at Crane Twenty - seventh street plant, United Dry Docks Inc., New York

Useful Hints on Cargo Handling



THE ASASON MARU has her winches placed on top of mast houses. The top of the mast house is on a level with a hatch trunk which runs the entire length of the deck. The electric winches are within the line of hatches leaving the decks clear. The controls are placed amidship at the edge of the hatch coaming.

All plating of the shell in way of the hatches is beveled to eliminate the possibility of cargo slings catching on edges.

All hatch covers are interchangable section for section. The hatch beams have a large slot on the top face to allow hooking beam slings easily. This also eliminates possibility of the sling hooks dropping out should the beams touch the hatch coaming when being hoisted out. The slots on the coamings for the beams have one side approximately two inches higher than the other to facilitate placing of the beams. The upper corners of the slots are braced by small triangular pieces to prevent bending. Stevedores are at times held up as much as a half hour straightening a slot in order to place a beam when the slots are bent.

Patented wire clamps shackled permanently into deck for a stopper for each topping lift instead of a small chain stopper which is ordinarily used and which one generally has to look all over the ship for, would seem to be a worthwhile improvement.

As much as possible all spaces between shaft tunnels and stanchions in the holds have been eliminated by making tanks of them. Permanent slots have been constructed on the midship line for placing grain boards.

All corners and cracks on underside of hatch coamings around stanchions etc. are rounded to eliminate cutting of cables.

All sounding pipes are located at side of deck thus leaving clear space for deck loads.

Footings are placed on deck for putting wood stanchions into when loading deck load. These stanchions run from the deck alongside the bulwark. A piece of bar steel is riveted to outside of bulwark and comes above top, two pieces about ten inches apart and bending away from each other forming prongs of the cleat. All 'tween deck hatches have a three inch coaming.

THIS page is being devoted to short items on all matters having to do with the more efficient turn-around of ships. These items are intended to be of a helpful nature.

We will welcome for this page brief descriptions, illustrated if possible, of any better or safer way of performing any function in cargo handling. Also, any questions submitted will be answered by the editor.

Loading Case Oil

CASE oil is loaded at an oil terminal in New York harbor with a single fall operated by an electric pier winch. Eight cases are handled in a slingload, six on edge and the top two on the flat. A rope sling is used. The load is hoisted up to the deck, a skid against the ship protecting them from catching on the plating and scraping the paint, then the boom swings over the hold and load is lowered.

The stevedore of the Newtex line, New York, covers slingloads with pieces of tarpaulins when loading or discharging in inclement weather.

Flexibility in Equipment

EQUIPMENT for freight and materials handling may be grouped into many classifications ranging from overhead gravity cranes down to hand trucks and there is a definite phase of transportation plant as well as carrier transportation to which each classification is best suited. However, there is a certain amount of overlapping of the functions of the various types of equipment, so that a given problem may be solved satisfactorily by more than one class of equipment.

In order to obtain equipment which will give the lowest unit cost, there are many factors which must be considered. Except in standardized operations with a heavy volume of tonnage, one of the most important factors is the flexibility of the equipment—its ability to perform two or more kinds of work. Flexibility is necessary to obtain maximum economy especially with the low volume of tonnage moving under present conditions. In many cases, the equipment is distinctly a losing investment unless the total volume handled by the machine is increased by designing it to do more than one class of work.

Old automobile tires are effectively used in the holds of vessels as landing platforms for slings. The tires are laid on top of other cargo, spaced two to a sling. In discharging cargo the empty platforms are landed on the two tires, loaded as is, and then hoisted out of the ship. This method of landing platform slings saves other cargo from damage. The same idea can also be applied when landing loaded slings while loading the ship.

Pneumatic Type Conveyors

CONVEYORS are used extensively in handling bulk materials. Pneumatic conveyors, although they require somewhat more power than mechanical conveyors, are used widely for handling grain, food chips, ashes and similar materials because the installation cost is low and labor and maintenance costs are low.

Pneumatic conveyors are of two types, suction and pressure. In the suction method, a blower exhausts air from a sealed tank which is connected by the conveyor pipe to the source of supply or the air is exhausted from a pipe with a portable section which is placed in the material to be moved.

In the pressure system, a feed device introduces the material into the conveyor pipe through which air is flowing and the air carries the material to a hopper or bin.

There is a lot of loose talk about co-operation—loose because those who talk forget that you can't co-operate with a man unless you know what he wants to do and what his ideals are. Co-operation should begin by making clear what the object is and by what means it is proposed to accomplish the end desired.

In the February MARINE REVIEW, page 31, in the item on "Unloading Coal from Barges," it was erroneously stated that the traveling steeple coal towers, each had a capacity of 3500 short tons per hour. This should be 350 tons per hour.

Capt. W.M.McFarland Dies, Dean of Engineering

Capt. Walter Martin McFarland, U.S.N. (retired), for twenty years manager of the marine department of the Babcock & Wilcox Co., New York, from active service in which he retired in 1931, died at his home, Washington, March 4, after a brief illness.

He was born in Washington, Aug. 5, 1859, and was educated in the public schools of that city, the preparatory school of Columbia university, and later entered the United States Naval academy from which he was graduated second in the class of 1879. In addition to service at sea he was for a time inspector of machinery for naval vessels under construction, and was twice attached to the bureau of steam engineering as assistant to Admiral George W. Melville, engineer-in-chief.

He was commissioned chief engineer in 1898 and for 20 years he was the youngest officer to have reached that grade. During his service with the navy he represented the United States at various international meetings on naval architecture and marine engineering.

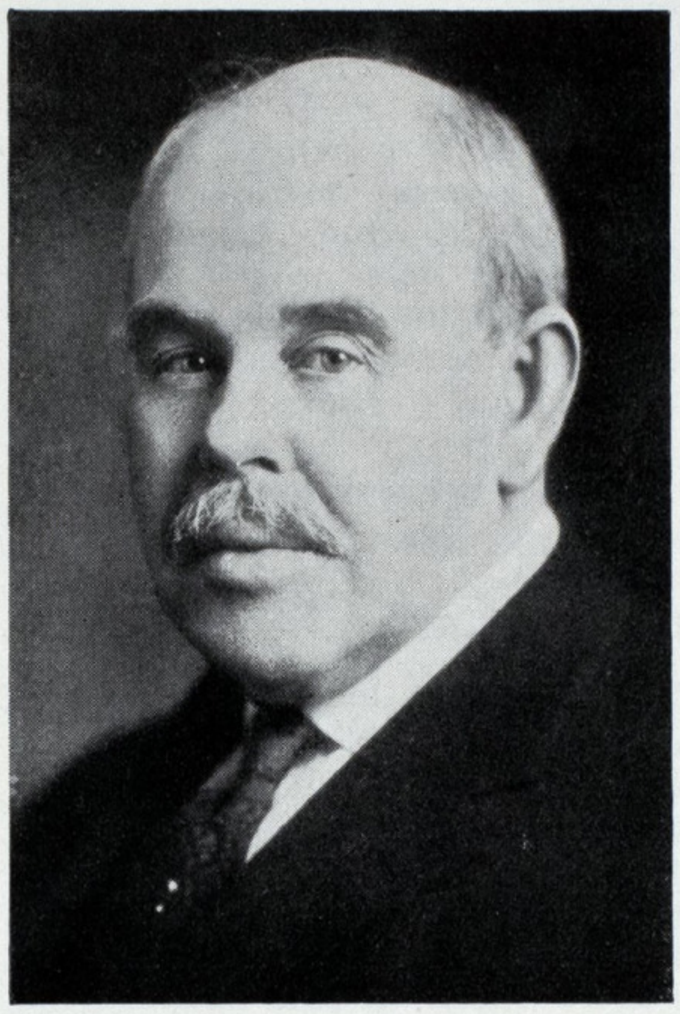
In 1899 he resigned from the navy to become vice president of the Westinghouse Electric & Mfg. Co., where he supervised many large contracts and publicity. He resigned from this position in 1910 and entered the service of the Babcock & Wilcox Co. as manager of the marine department. In this position he found an opportunity to exercise his great knowledge and skill in matters pertaining to marine propulsion. During his service, the company was active in the development of marine boilers to operate at higher pressures and temperatures and in addition, built the greater part of the boilers installed in naval and merchant vessels during the World war. He held this position until his retirement in 1931.

His latest work was as chairman of the committee to co-ordinate marine boiler rules which was organized in 1929 for co-ordinating existing boiler codes to serve as a basis for the revision of the rules of the steamboat inspection service of the American Bureau of Shipping. This was work of far reaching importance.

He continued to take a keen interest in all matters concerning shipbuilding and marine engineering. Highly respected and honored in the profession he had served so well, he was past president and honorary member of the Society of Naval Architects and Marine Engineers, a past vice president of the American Society of Mechanical Engineers, a member of the council of the American Society of Naval Engineers, and president emeritus of the Webb Institute of Naval Architecture.

Among his many other activities he was a frequent contributor to the technical press of the country, his work along this line being of high value, both for its technical and historical background. He was for four years editor of the *Journal of the Society of Naval Engineers.*

In 1883 he was detailed by the navy to fill a vacancy at Cornell university as assistant professor of mechanical engineering, a position he held for two years. He later lectured at the Naval War college, the Post Graduate School at Annapolis, Columbia university and Johns Hopkins university.



Admiral Cone Resigns

Former chairman of the United States shipping board, Rear Admiral Hutch I. Cone, U. S. N., (retired), on March 1 resigned as chairman of the committee on regulations. His resignation was looked upon as a personal protest to what he considered the gradual loss of influence of the board.

Admiral Cone was appointed to the old shipping board by President Coolidge and geographically represented the south on the board. He was reappointed by President Hoover and on the resignation of T. V. O'Connor as chairman, President Roosevelt made him chairman until the board was finally dissolved as formerly constituted and was reorganized as a bureau in the department of commerce. The President, however, asked Admiral Cone to continue to give the new bureau the benefit of his long experience, and appointed him chairman of the advisory committee on shipping board matters reporting to Secretary Roper.

H. C. Blackiston Retires as Furness Withy Director

After 45 years of service with the Furness, Withy & Co. in the United States and Canada, the last 15 years as director, H. C. Blackiston will retire from active duty on April 30. Henry Smurthwaite, who has arrived in the United States from London, will succeed him as director.

During his service the Furness company has grown from a small line to become one of the larger British shipping concerns. Mr. Blackiston is widely known in American shipping and has long been an outstanding figure in international marine transportation circles. Born in 1872 in Kent county, Md., he became a checking clerk at New York with the old Furness company. Frederick Lewis, now Lord Essendon, and chairman, joined the company in London at about the same time. Both men early exhibited unusual ability and their rise was parallel and rapid.

Only four vessels were owned by the company when Mr. Blackiston began his career, while today it has under its control 300 cargo and passenger vessels operating all over the world. The operations of the company until 15 years ago, when he became director, were confined to cargo vessels. Soon after he took charge the company acquired the old Quebec Steamship Co., which operated the Bermuda line. This line has had a remarkable development. It now has in service the large fine ocean liners QUEEN OF BERMUDA and MONARCH of BERMUDA, each costing in the vicinity of $8,000,000. Both are luxury liners and were built to anticipate the demands of American travelers.

Appropos of his retirement, Mr. Blackiston said: "When one retires he furls his sails and coils his ropes and is through with the sea forever." He can look forward deservedly to many years of quiet contentment but it is safe to say that he will never lose his interest in the sea.

Diesel Engines, Bids in

On Feb. 27 bids were opened by the United States engineer office, Louisville, Ky., for furnishing two 750-horsepower diesel propelling engines, one 575-kilowatt diesel driven generating set and one 1600-horsepower diesel engine for pump drive.

The lowest total evaluated bid for this equipment was $157,600 from Busch Sulzer Bros. Diesel Engine Co., St. Louis. The three other bids were Winton Engine Corp., Cleveland, $162,750; McIntosh & Seymour Corp., Auburn, N. Y., $170,750; and Fairbanks, Morse & Co., Chicago, $235,308.

Personal Sketches of Marine Men

Warren R. Elsey, Superintendent, Floating Equipment, Pennsylvania Railroad

By Ben K. Price

HE IS in charge of the maintenance of one of the largest railroad owned fleets, a fleet of 314 units of about 160,000 gross tons.

HIS early training in marine transportation was in connection with his father's fleet of river vessels, operating out of Pittsburgh.

HE WAS appointed superintendent of floating equipment in 1929. He supervised the design and construction of the ferry DEL-MAR-VA.

ON HIS capacity as superintendent of floating equipment of the Pennsylvania railroad, Warren R. Elsey is in charge of the maintenance of one of the largest railroad owned fleets of its kind—a fleet comprising 314 units and totaling approximately 160,000 gross tons. Although relatively young —he was 38 when he first got the position—Mr. Elsey has shown a flair for design, construction and operation, handed down by a line of ship operators, that has made him outstanding in his branch of water transportation.

Mr. Elsey was born in Pittsburgh April 1, 1892, the son of Capt. Robert Graham Elsey and the grandson of Capt. Warren Elsey, both of whom spent their lives in the development of shipping on western rivers. His grandfather, in fact, organized the river fleet of the Vesta Coal Co., subsidiary of the Jones & Laughlin Steel Corp., Pittsburgh, building and later operating the boats engaged in this service, and Mr. Elsey's own father succeeded him, remaining active in the operation of the fleet until 1920.

With this background, it is not surprising that Mr. Elsey eventually gravitated to his present position in marine transportation. As a matter of fact, as a young man going to school, he spent his vacations in his father's fleet, but it was not until after he left school and had meanwhile served a number of years in railroading, that he again picked up the thread.

In these intervening years he had been graduated from the school of applied industries, Carnegie Institute of Technology, Pittsburgh (this in 1910), had served several months as an apprentice in the shops of the Jones & Laughlin Steel Corp., Pittsburgh, and for a brief period as draftsman with the Pennsylvania railroad and had moved on to higher positions. He had become motive power inspector, then assistant master mechanic, and, subsequently, master mechanic, with headquarters in Baltimore.

It was here, in this latter capacity, that he first became identified with the marine affairs of the Pennsylvania railroad, for his duties included maintenance, supervision of steamers of the Baltimore & Virginia Steamboat Co. and Baltimore & Eastern railroad, Pennsylvania subsidiaries. Then in January 1929, came his appointment as acting superintendent of floating equipment and later, in December of that year, superintendent, a position he has held ever since.

In his present capacity, Mr. Elsey is in charge of the design and maintenance of floating equipment of the Pennsylvania railroad, the Long Island railroad and the Philadelphia & Camden Ferry Co. This equipment is in operation in New York harbor, Philadelphia, Baltimore and the lower Chesapeake Bay, with by far the largest fleet of boats operating in New York harbor. Here there are 274, including 78 car floats, 32 tugs, 7 self-propelled lighters, 6 ferry boats and numerous other types of craft. Incidentally, the New York fleet includes 9 diesel electric tugs.

In Philadelphia, there are 12 car floats, 5 ferry boats, 4 grain barges, 3 tugs and 2 floating grain elevators and in Baltimore and the lower Chesapeake, 7 bay floats, 6 tugs, 3 steamers and 1 ferry. The largest single unit is the steamer VIRGINIA LEE, operating between Cape Charles, Old Point Comfort and Norfolk, Va. This boat was built in 1928 and is 302 feet long, with 50-foot beam.

Since Mr. Elsey came to Jersey City, N. J., superintendent headquarters, he has participated in the design and building of floating grain elevators and steel grain barges and is now supervising the construction of two 1200-ton steel coal barges. Mr. Elsey was active in the design and construction of the DEL-MAR-VA, of the Virginia Ferry Corp., a vessel put into operation in January 1934, and unique in many respects.

The car floats under his supervision, it is interesting to note, have a total capacity for carrying approximately 950 standard railroad cars; they carry about 12 miles of track, apart from close to three miles of what might be termed track on station platforms.

Mr. Elsey resides in Elizabeth, N. J. and is a member of the Maritime Exchange of New York.

Up and Down the Great Lakes

Lake Erie Open—Lake Carriers Ask Exemption—Lake Levels—Coal Handling Plant—Power Show

THE 1935 navigation season on the lakes between the ports of Detroit and Toledo was opened by the steamer E. C. POPE of the Nicholson Transportation Co. She left Detroit at 7:30 a.m. March 1 and arrived at the Presque Isle coal docks of the Chesapeake & Ohio railway at 6:50 p.m. For her return trip to Detroit, the POPE, chartered by the Ford Motor Co., loaded 3200 tons of coal for the River Rouge, Mich., plant, and sailed within two and a half hours after arriving at Toledo.

The POPE carried a crew of 22 men, headed by Capt. W. J. Edgar of Detroit. Captain Edgar said the trip was uneventful except for a six-mile stretch when ice blown from the Canadian side caused a two-hour delay. Keepers were landed at the crib and harbor lighthouses in readiness for the steamer which made the trip six weeks ahead of the opening of the insurance season and 16 days ahead of last year's first trip.

Among other vessels scheduled for what might be called the pre-season coal trade between Detroit and Toledo are the Pringle line tug BARKHAMSTEAD with the barge MAIDA, and the Reiss Steamship Co. vessel JOHN A. KLING.

Power Show on Seeandbee

Beginning June 24, a power exposition to be known as "The Great Lakes Power Show and Mechanical Exposition" will be held on the giant lake steamer SEEANDBEE of the Cleveland & Buffalo Transit Co. The exposition will be assembled in Cleveland June 24. The SEEANDBEE will sail that evening on a night cruise to Buffalo where the show will start, June 25. Returning to Cleveland the exposition will be open to visitors, all day, June 26. That evening the SEEANDBEE will sail for Detroit where the final day of the show will be held June 27. The vessel will then return to Cleveland and the exposition will be dismantled. A large attendance is expected.

Space for exhibits will be available on all four covered decks, 200 booths in all. Power equipment, power plant materials and supplies, accessories, manufactured products in allied fields, general industrial equipment, etc., will constitute the chief items on display.

For those visitors who may require more than one day's inspection of the exposition, accommodation can be provided aboard.

Further information may be obtained from Ernest H. Smith, managing director of the exposition, 3910 Carnegie avenue, Cleveland. J. F. Wood, fleet engineer, Pittsburgh Steamship Co., Cleveland, is a member of the advisory board.

February Lake Levels

The United States Lake survey reports the following monthly mean stages of the Great Lakes for the month of February, 1935, determined from daily readings of staff gages.

Lakes	Feet above mean sea level
Superior	602.38
Michigan-Huron	577.70
St. Clair	571.83
Erie	569.51
Ontario	243.19

Lake Superior was 0.17 foot lower than in January and it was 0.15 foot above the February stage of a year ago.

Lakes Michigan-Huron were 0.08 foot higher than in January and they were 0.22 foot above the February stage of a year ago, 0.91 foot below the average stage of February of the last ten years.

Lake Erie was 0.04 foot lower than in January and it was 0.11 foot below the February stage of a year ago, 1.61 feet below the average stage of February of the last ten years.

Lake Ontario was 0.17 foot higher than in January and it was 0.49 foot below the February stage of a year ago, 1.87 feet below the average stage of February of the last ten years.

New Coal Handling Plant

The Lackawanna Co. is installing a new coal loading plant at Oswego, N. Y. Caissons for concrete foundations are being placed for a coal tipple and conveyor loading plant which will be erected, beginning April 1, by the R. W. Kalkenback Co., Bedford, O., low bidder for this work. The plant will have loading capacity for about 1000 tons per hour for either bituminous or anthracite coal of any grade, conveyed through an electrically controlled telescopic chute into holds of vessels.

The terminal will have two tracks, 8 feet in elevation above the terminal deck, the cars being unloaded from hoppers into a conveyor and the coal thence elevated to the top of a tower 45 feet high where the tipple with operating platforms is located for handling the coal and discharging into ships. It is expected according to railroad traffic estimates that the new plant will handle about 350,000 tons of bituminous coal in the season. The new plant will be ready for operation about May 10.

According to report of the Lake Superior Iron Ore association, 158,974 tons of iron ore were shipped from Lake Erie ports to inland furnaces during February, 1935. This was more than double the amount shipped during February, 1934, when the total was 70,531 tons.

The balance of ore remaining on the docks March 1 was 4,867,583 tons as against 5,175,886 tons a year ago.

Exemption from Regulation

The Lake Carriers, represented by Newton D. Baker, general counsel, and a delegation of vesselmen, appeared before the senate commerce committee on March 18, and requested that the lake bulk freight carriers be exempted from regulation under the Wheeler bill.

This bill is based on the report prepared by Joseph B. Eastman, federal co-ordinator of transportation. In his report Mr. Eastman called attention to the fact that the lake bulk carriers have no direct competition with railroads and that, therefore, they might be exempted from the regulation proposed for other carriers. It was this action that was urged on the senate committee by Mr. Baker and the Lake Carriers represented by Capt. Joseph Wood, president of the Lake Carriers' association; L. C. Sabin and George A. Marr, vice presidents of the association; Walton McGean of the Pioneer Steamship Co., and A. E. R. Schneider, manager of the Cleveland-Cliffs fleet.

William S. Elliott, 72, one of the pioneer machinery manufacturers of the Pittsburgh district, died at Pittsburgh, Feb. 21. He was president of the Elliott Co., Jeannette, Pa.

George F. Elliott, his son, has been elected president.

SHIP PAINTING,

Some Experiences in Naval Practice

BY CAPT. HENRY WILLIAMS

IN A DISCUSSION which I heard some years ago of the question of corrosion fatigue of duraluminum airplane structures and of the urgent need for preventing all such corrosion, if the structure were to remain intact, the statement was made that there would be no need of protective coating for this purpose if the airplanes did not go near enough to the sea coast to be subjected to the corrosive effects of the salt air. This illustrates, if any illustration were needed, the difficulties encountered by those having to do with metal structures, in particular steel ships, subjected to the corrosive effect of sea water. While a large portion of the paint materials used on ships is for decorative purposes, the greater amounts are used in the effort to keep the structures intact. Many, and each a challenge to science and each a subject for research, are the difficulties encountered in assembling metal structures particularly steel ships and metal in any form which contacts sea water.

Weight An Important Factor

Limitation of tonnage of various types of naval ships, provided in the treaties for limitation of armament ,and the resultant reduction in weight and scantlings of steel structures has emphasized the need for preventing loss by corrosion of those lightened structures. It is known that naval architects commonly allow a margin in the the scantlings to care for losses by corrosion during the life of the ship. Naturally these margins must be minimized when the designer is working on a strict limit for displacement, with no limits on the demands for speed, cruising radius, armor and armament.

In living compartments and other compartments, which must be kept freshly painted for appearance sake, there is a problem in the tendency to build up a thick film of old paint. On naval vessels it is necessary to take special precautions against this condition on account of possible fire and smoke menace and the danger of paint particles flying when the structure is hit by a shot. Also there may be considerable added weight from this condition. Old paint must be scaled off periodically before repainting, or conditions will arise such as reported at times in the past where paint films as much as one-half inch in thickness were found on bulkheads of some ships long in service.

The problem of securing a ships' bottom paint that gives satisfactory results never has been solved. Progress is being made, but the final solution is not in sight. The purpose of a bottom paint is twofold, to protect the bottom plating from the corrosive effects of sea water and to act as a matrix holding the materials toxic to fouling growths and preventing their attachment. In a way these two functions are contradictory, as in order for the plant to serve as a satisfactory matrix for the toxics, it must in a measure be permeable to sea water so as to render the toxics available to repel the organisms seeking to attach themselves. If the paint is not permeable the poisons are locked up tightly and the barnacles attach themselves freely. The impermeable paint is more effective in preventing corrosion. The problem is to produce a paint that has a matrix permeable but durable, and that is not easy. Nearly all bottom paints are of the spirit-varnish type, that is, the resins or other substances used in the vehicle are dissolved in a volatile liquid which evaporates when the paint has been applied. A quick drying paint is essential in order that the vessel may be put in the water without delay after painting has been accomplished.

For many years the navy used bottom paints made with a vehicle consisting of shellac dissolved in alcohol. More recently use has been made of a vehicle consisting of a mixture of coal tar and pine rosin dissolved in mineral spirits. There has been more recently a development of a paint in which the vehicle consists of a formalin resin varnish. A number of various bottom paint combinations developed at the Mare Island navy yard and elsewhere are being used experimentally on the bottoms of naval vessels operating in the Pacific ocean. These experiments are conducted in such a manner as to give a direct comparison of results on each ship's bottom, and after a certain number of such tests, it is possible to determine definitely which of the paint combinations is most effective.

Fouling conditions on vessels of the navy based in the Pacific ocean are found to be more severe than on those operating on the Atlantic coast, due to a number of causes. Among the principal causes is the fact that these vessels when at their bases lie in what is practically an open roadstead of the ocean. Marine growths are much more prolific here than in harbors where the water may be partially brackish at times or contaminated by sewage from large cities.

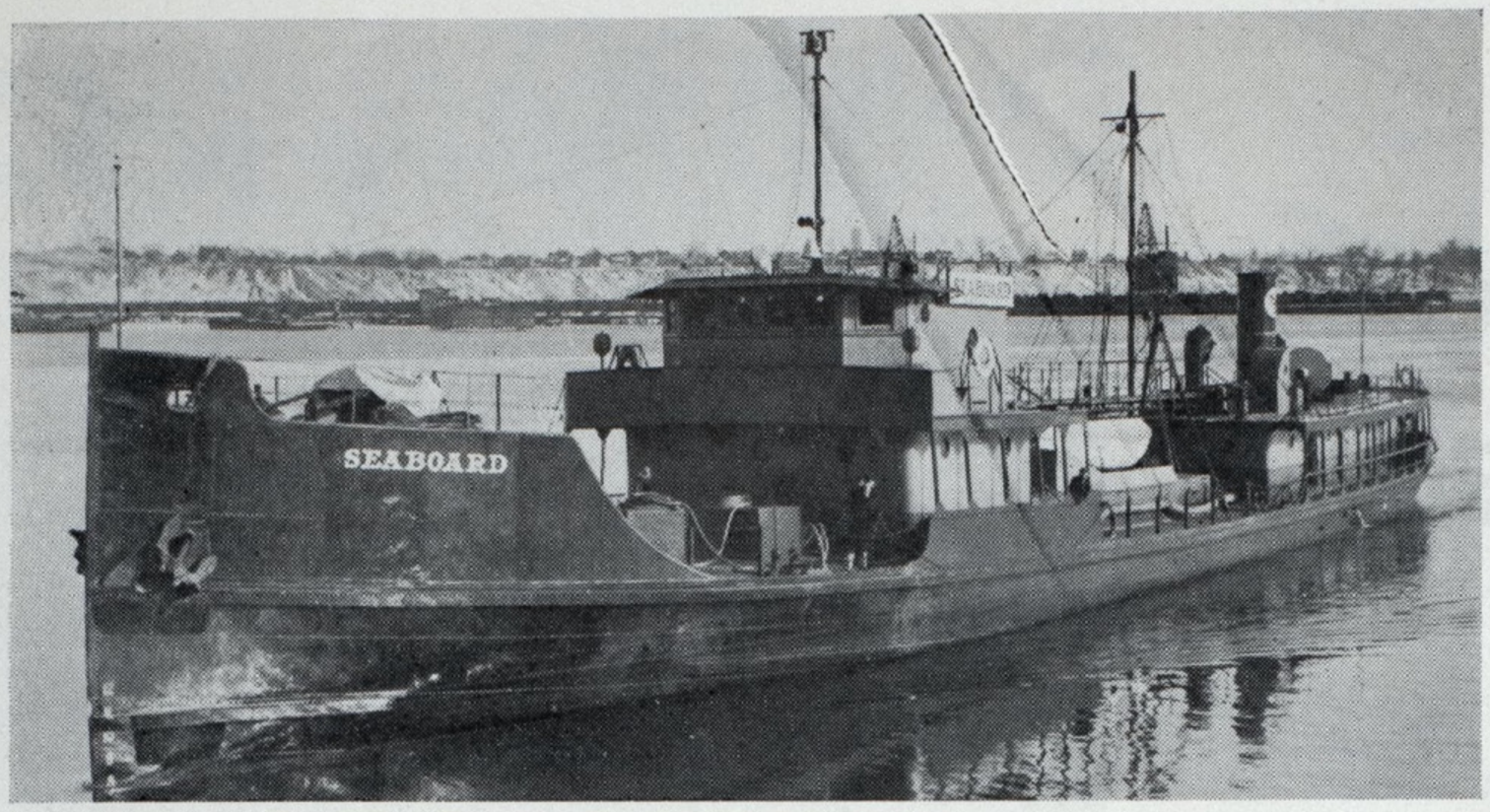
Best Time for Drydocking

The Scripps Institute of Oceanography at La Jolla, Calif., some years ago made a study of the seasons of reproduction of the various types of fouling growths. It was ascertained that in those waters (vicinity of San Diego) the period of attachment for barnacles commences in May, reaches a maximum in July and falls off to a minimum by the end of August. For hydroids the periods of maximum growth appear in April and again in September and October. This information is of im-

(*Continued on Page* 62)

THE author Captain Williams is one of the officers of the construction corps of the navy who has made a special study of paints for ships, and particularly ships' bottom paints. He has been designated at various times by the naval authorities to take charge of special investigations and development work in ship bottom paints and has accumulated in this manner a wide knowledge of the problems and difficulties and the methods adopted for meeting them. Added to this he has had many years' experience in navy yards in connection with the manufacture and testing of ships' bottom paints and their application to the bottoms of naval and merchant vessels dry docked at navy yards.

Editor's Note



Diesel tanker for coastwise service, converted from old iron hull Long Island Sound passenger and freight steamer, at Providence, R. I.

Convert Old Sound Steamer To Coastwise Tanker

THE diesel tanker SEABOARD, owned by Louie D. Pierce, Warwick, R. I., and shown in the accompanying illustration, probably represents one of the most unique conversions on record. The conversion was completed last December and involved a cost of somewhat less than $100,000 all told. Originally she was the Long Island sound passenger and freight steamer of the same name, for many years engaged in the service of the Hartford & New York Transportation Co. between New York City and Bridgeport, Conn.

Of iron hull construction, the SEABOARD was built at Wilmington, Del., in 1874, only nine years after the end of the Civil war. In 1930, sometime after being withdrawn from service, she was stripped of valuables, and the bare hull was put up for sale. She was acquired by the present owner and towed to Providence, R. I., the towing charges being more than the price paid for the hull. For three years she lay in an abandoned slip during which time the owner, employing seldom less than 15 men, undertook the job of converting her into a coastwise tanker. While still afloat, by canting the vessel from side to side with the help of temporary tanks lashed to the deck, and by trimming fore and aft, the iron hull was nearly all covered with ¼-inch soft steel plates by means of arc welding. The process was completed in dry dock at Newport, R. I.

When the vessel returned to Providence, about 92 per cent of her frames and beams were renewed. Deck houses, bridge, and the superstructure generally gradually took form.

In the meantime the old steeple, compound, steam engine, a rare example of this now almost forgotten type of engine, was removed and a modern 4-cycle, 6-cylinder, Worthington diesel engine was substituted for main propulsion. This engine, built by the Worthington Pump & Machinery Corp. in 1934, has a bore of 13¼ inches and a stroke of 17½ inches and develops 450 brake horsepower at 327 revolutions per minute. It is of solid injection type and weighs 37,000 pounds. The main compressor is built in and the mechanical efficiency of the engine is 87.7 per cent. The speed of the vessel in service is 9.6 knots.

For auxiliary power there is a 55-horsepower, 4-cycle, 2-cylinder Worthington diesel engine, connected by belts and clutches to a 700 gallons per minute cargo pump, a two-stage auxiliary compressor and a 3½-kilowatt at 125 volts auxiliary generator, all three furnished by the Worthington Pump & Machinery Corp. The emergency compressor and emergency lighting system are driven by belts from a 5-horsepower Petters semidiesel engine.

As converted the SEABOARD has her original length of 184 feet, 6 inches; a beam of 28 feet, 3 inches and a depth of 12 feet, 2½ inches. The gross tonnage is 514 and the net tonnage 390. Loaded with 220,000 gallons of oil, the draft is 10 feet, 6 inches. There are six cargo tanks and one cargo trimming tank. Three of these cargo tanks are forward of the bridge and the remaining three cargo tanks and the trimming tank are located aft of the bridge.

The captain's and officers' quarters are located in the bridge structure. Crew accommodations are located aft.

The engine room is unusually spacious, occupying as it does the entire beam of the vessel. The valve manifold for the cargo tanks is located on the forward bulkhead. A work bench is fitted on the starboard side. For heating purposes, located in the engine room, there is a 16-horsepower boiler of Lidgerwood make, fitted with a Pierce automatic oil burner with electric drive.

The vessel is equipped with two 180 cubic feet lifeboats having a total capacity for 36 persons. These lifeboats are handled in slings by derricks which are located on the forward end of the main house aft. Geared hand winches are used. The vessel is steered by a Holmes auto-pilot which holds to a course set by the magnetic compass.

The tanker SEABOARD is intended for service between the terminal of the owner at Tiverton, R. I., and other New England ports. The all-welded scow INDEPENDENT of 164 tons built in 1925 is the other unit in this service.

The data and photograph used in this article were received from Kenneth Shepard, Edgewood, R. I.

Construct Welded Vessels At United Dry Docks

The Crane Twenty-seventh street plant, Truss-weld division, of the United Dry Docks Inc. has the following work under way:

One steel, twin screw diesel tanker, 64 feet 7 inches long, 21 feet beam and 10 feet depth, with a capacity of 40,000 gallons, for the Studerus Transportation Co. Inc., Kearny, N. J. This vessel is being constructed on the "free flow frame system," on which patent is pending. Two 60-horsepower Fairbanks Morse diesel engines fitted with electric starters will be used for propulsion. A 750-gallon per minute Viking cargo pump is to be installed on deck and will be driven by shaft or belt from one of the main engines.

One steel, tow, oil barge of 200,000 gallons capacity, 110 feet long, 30 feet beam and 10 feet deep for the Telco Oil Transport Corp., Staten Island, N. Y. This vessel is being constructed on the truss-weld system and is to be used in river, harbor and New York State Barge canal service. There will be six main cargo tanks served by two 6-inch, 750 gallons per minute, Viking pumps driven by two engines of automotive type.

One steel hull delivery boat, 50 feet long, 10 feet beam and 3 feet deep, for Lequerica & Co., Cartagena, Colombia, S. A. The hull of modified speed type is being constructed on the truss-weld system and is fitted with a double bottom. The propelling power will be two 40-horsepower Fairbanks Morse diesel engines.

This is reported to be the world's largest cargo of petroleum as it was moved down the Mississippi river by the SPRAGUE. *Nineteen steel barges are included, loaded with* 224,000 *barrels of crude oil*

Forged Shaft in River Craft Replaced After 30 Years

BY EDWIN F. CONE

AN INTERESTING application of forged steel was completed recently by the Bethlehem Steel Co., Bethlehem, Pa., when a large hollow nickel steel wheel shaft was forged for an old-style rear paddle-wheel river steamboat. The shaft was furnished to replace one that had been in service for over 30 years on the steamer SPRAGUE now plying between Baton Rouge, La., and Memphis, Tenn., on the Mississippi.

The new shaft was installed in January, 1934, and the SPRAGUE took up her regular duties on Feb. 9. The original shaft also was of nickel steel, hollow forged. Its dimensions were:

Overall length	47 feet 2 inches
Outside diameter	31 inches
Inside diameter	21 inches
Ends closed down to an inside diameter of	10 inches
Shipping weight	80,220 pounds

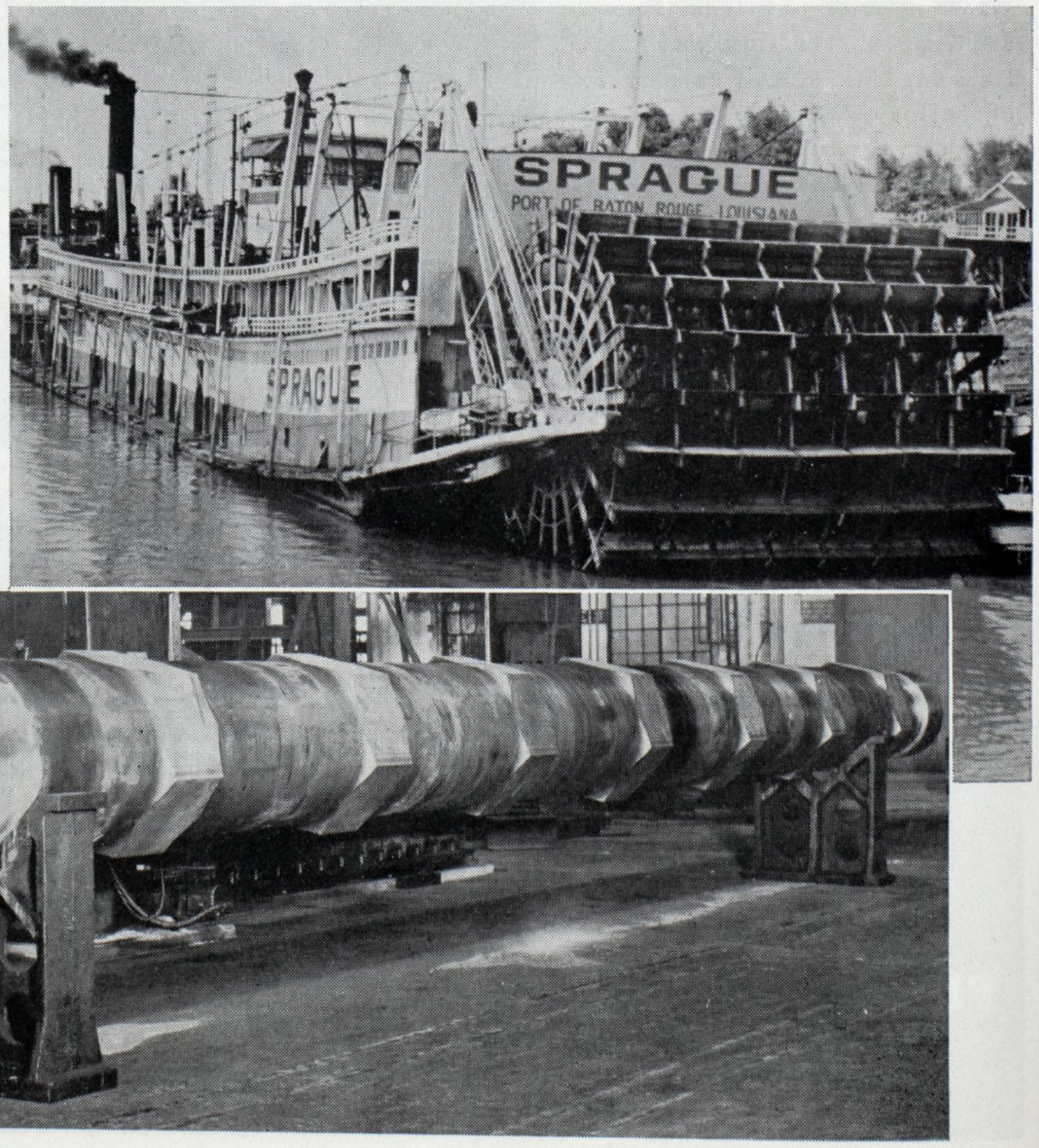
Physical properties of the steel were as follows:

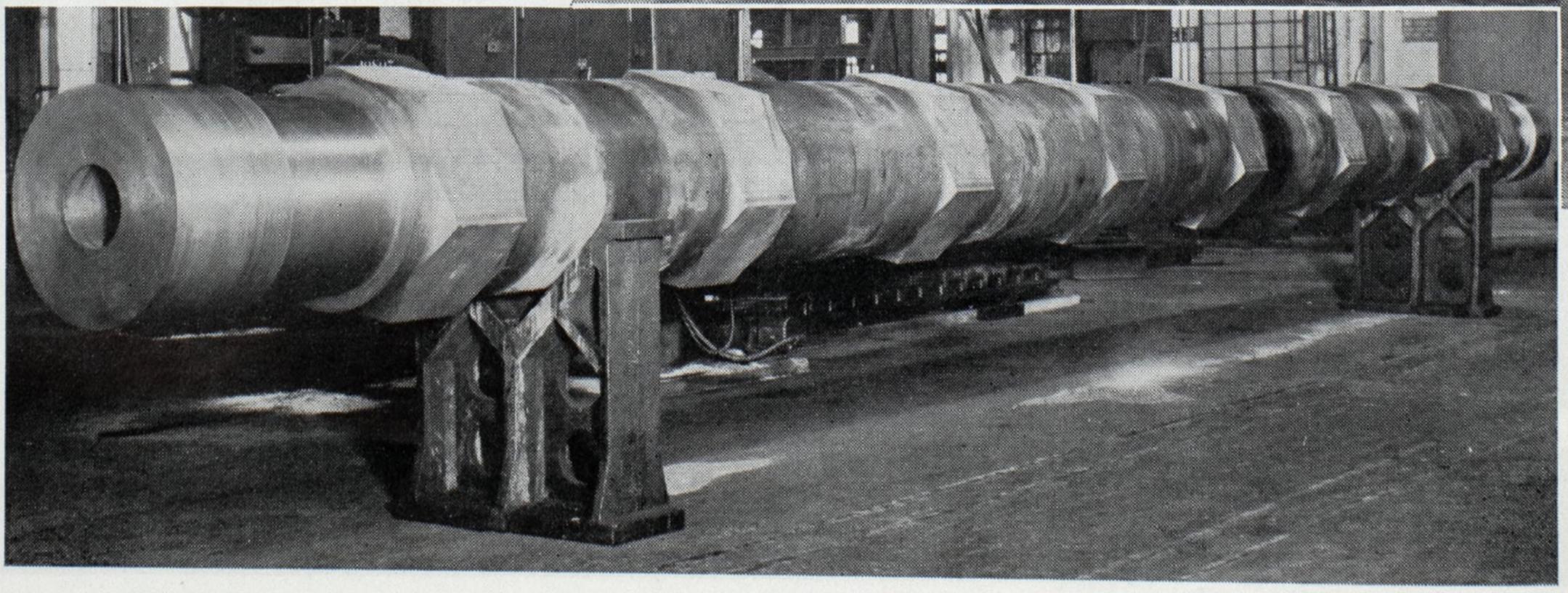
Tensile strength	81,810 lbs. sq. in
Elastic limit	51,130 lbs. sq. in.
Elongation	25.50 per cent
Reduction of area	49.37 per cent

The new shaft was of 3.25 per cent nickel steel and had the same dimensions as the original one. It was hollow forged, then rough bored and the ends closed in. Its shipping weight was 78,305 pounds. Its heat treatment consisted of a series of air and furnace coolings and its final physical properties showed an average tensile strength of 90,000 pounds per square inch, an elastic limit of 54,000 pounds per square inch, an elongation of 26.5 per cent and a reduction of area of 57.3 per cent.

The steamboat on which the shaft was replaced is claimed to be the largest river steamboat in the world and its history is therefore of interest. Built in 1902 and 1903 by the Iowa Iron Works Co. (now the Dubuque Boat & Boiler Works), Dubuque, Iowa, for the Monongahela River Consolidated Coal & Coke Co., Pittsburgh, the vessel has a length of 315 feet, a beam of 62 feet and a hull depth of 9 feet. The propelling stern wheel has a diameter of 37 feet with bucket planks 4 feet

AT THE RIGHT is the old-style river steamer SPRAGUE, *in which a hollow-forged nickel steel shaft recently was replaced after* 30 *years of service. Below is shown the new shaft as it appeared before shipment from the forge shop. Over* 47 *feet in length, it weighs nearly* 80,000 *pounds*





wide by 40 feet long, the wheel being turned at an average of 8½ revolutions per minute by two 28-inch by 63-inch by 12 feet compound condensing engines. The complement of the boat at that time was 55 persons.

Originally designed and built to tow coal from Pittsburgh down the Ohio and Mississippi rivers to southern ports, her first large tow of coal is understood to have arrived in Memphis, Tenn., in May, 1904, and was made up of 56 barges and two barges of fuel. The 56 barges contained 1,400,000 bushels of coal, covering an area of 5.9 acres. It is understood that the vessel was assisted in handling this load by one or more tow boats.

Previous to the building of the SPRAGUE, coal barges, made of light wood, were not returned to Pittsburgh districts, but were sold at points where the coal was consumed. Thus each shipment was made in new wooden barges. The diminishing supply of wood, involving an increasing cost of wooden barges, is believed to have led to the design and construction of a vessel of the size of the SPRAGUE, which would be large enough to return the barges to the coal fields for reloading.

For some years the ship was operated by the Monongahela company, but with the introduction of fuel oil and a consequent decrease in the demand for coal, it was laid up for some time. In 1925, however, it was purchased by the Standard Oil Co. of Louisiana and, after extensive repairs, was placed in service between Baton Rouge, Grand Lake, Ark., and Memphis. From that time the steamer was in continuous service until August, 1933, when it was decided to replace the original steel shaft with a new one.

After the installation of the new shaft in January, 1934, the steamer was placed in service transporting fuel oil between Baton Rouge and Memphis. An example of the towing burden which this vessel is now assuming is the record tow of 224,000 barrels of crude oil on one of her recent trips, shown in an accompanying illustration. This tow was made up of 19 steel barges, the over-all dimensions of the fleet being approximately one city block wide and four city blocks long. It would have taken 1120 tank cars of 200 barrels each, equivalent to 28 trains of 40 cars each, to have moved this cargo by rail.

Tribute to Steelmakers

The foregoing facts give a comprehensive picture of the load which the wheel shaft of such a vessel, with the incidental strains and stresses, must move through the water. For nearly 30 years the original nickel steel shaft stood the strain without breakage, but because of the presence of a series of cracks in shaft journals it was thought advisable to replace it.

The record made by the original shaft for a period of 30 years pays high tribute to the technic of steel manufacture in a period when refinements in steel production, heat treatment and other manufacturing details, were by no means of the high order as practiced today. The performance of this shaft leaves much for speculation as to what are the actual limitations for material processed in the present day where highly refined methods and metallurgically controlled practices have replaced the relatively crude and older methods of steel manufacture.

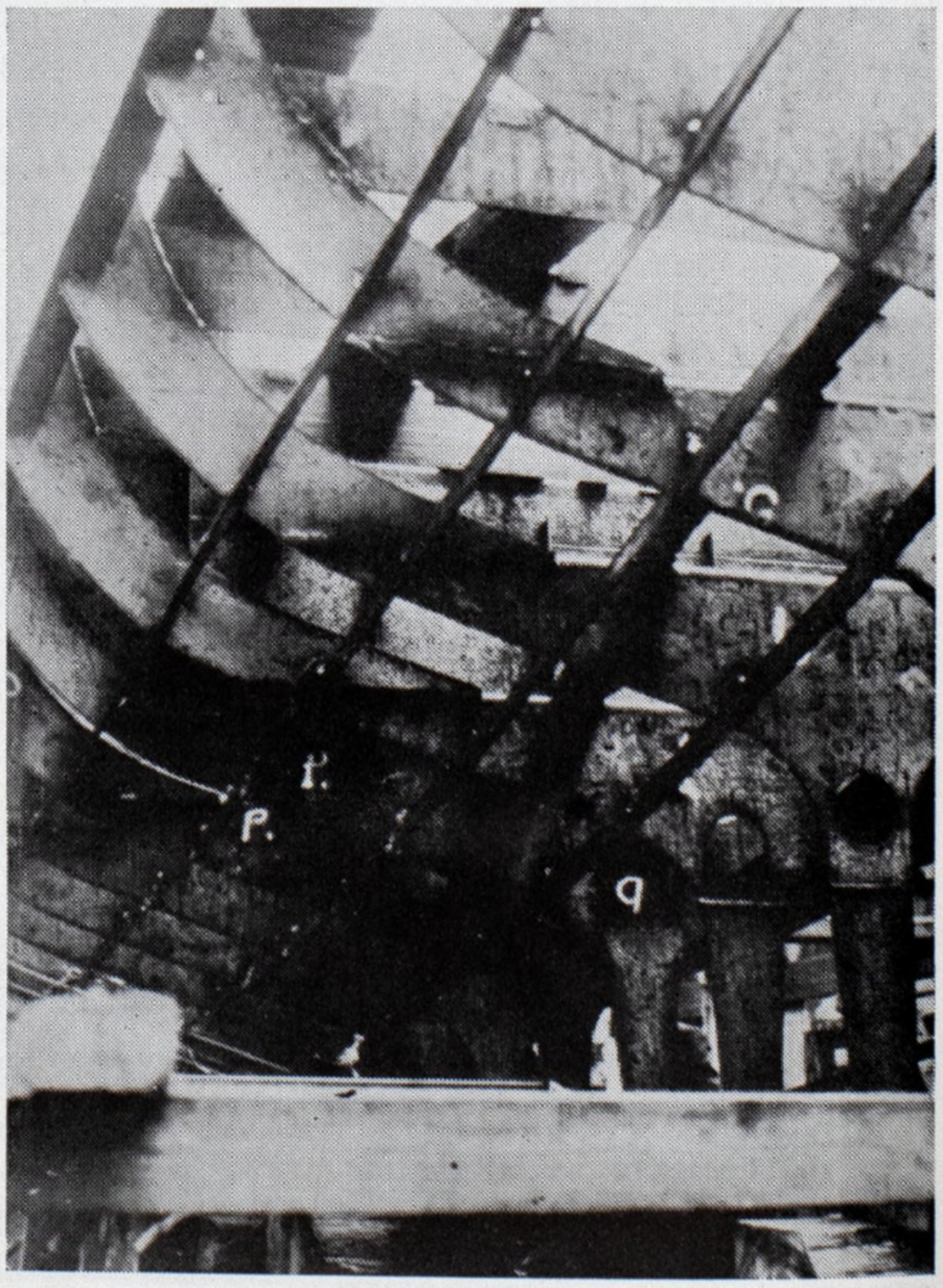
Dispatch Boats of Arc Welded Steel

CONTRACT for 18 arc welded steel service launches to be operated in Venezuela was recently awarded to Jakobson & Peterson Co. Inc., Brooklyn, N. Y., by the Lago Petroleum Corp., subsidiary of the Standard Oil Co. of New Jersey. Of the dispatch boat type, these vessels were designed by the owners as small passenger and cargo vessels for transporting mail and light supplies.

These vessels are 44 feet in length, 10 feet beam, 4 feet 3 inches draft. Each boat is designed for one-man operation and will be powered with a 100-horsepower diesel engine.

Construction consists of a bar keel ⅞-inch thick by 3½ inches wide and an interesting system of hull framing. The latter is made up of transverse frames ¼-inch thick by 6 inches wide and spaced 18 inches apart. These transverse frames are notched on the outboard face to receive longitudinal stringers which are welded to each frame from stem to stern. Construction of these stringers is shown in the accompanying illustration.

Except under seams, these stringers are ¼-inch thick by 3 inches wide. Where the stringers are in the way of seams, they are ⅜-inch thick and 3 inches wide. These latter stringers serve as seam battens and when longitudinal seams are welded, the hull plating, in addition to being welded together, becomes integral with the framing. The hull plating thickness is ¼-inch on deck and 3/16-inch in sides and bottom. All welding on these vessels was done with equipment manufactured by the Lincoln Electric Co., Cleveland.



STEEL dispatch boats for Venezuela, showing notched transverse frames and longitudinal stringers ready for welding

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Ship Painting

(*Continued from Page* 56)

portance in connection with the docking of ships. Antifouling paint freshly applied will prevent attachment of growths for a period of several months, after which it becomes gradually less effective until finally it loses its antifouling properties due mainly to the leaching out of the toxic material. If it can be arranged that the ships are docked and bottoms freshly painted about the time of the seasonal attachment of the growths, ships' bottoms might be expected to remain reasonably clean.

Radiobeacons in Navigation, Recommended Practices

IN ORDER to facilitate the use of the system of radiobeacons established along the coasts of the United States, radiobeacon charts are issued upon which these stations are shown, with their characteristics and operating schedules, including some Canadian stations. These charts are prepared for mounting in the ship's chartroom or pilot house. They are reprinted when there are important changes, and may be obtained, free, from the superintendents of lighthouses in the principal ports of the United States.

The general problem and practice of navigation are the same using bearings on radiobeacons as they are with visual bearings on lighthouses or other known objects, excepting for the much greater distances at which bearings may be utilized. Also, radio bearings may be combined with the results from any other source of information. Radiobeacons are now operated so as to facilitate frequent checks, both in clear weather and in low visibility.

Guarding Against Error

Subject to proper allowance for the effect of current and wind, if successive radio bearings do not change, it is shown that the vessel is proceeding directly for the radiobeacon station. In setting courses, the possibility of some error in direction finder bearings should not be overlooked. Special care should be used when conditions for taking radio bearings appear to be unfavorable, as for example, when the bearings may be affected by unusual static, or by night effect and at such time they should be repeated, and checked by every means available. Bearings passing over the land or parallel to the shore line, taken from a ship near the land, may have appreciable errors. Possible error due to reciprocal bearings must be guarded against. For bearings taken at a distance of over 50 miles, a correction must be applied when plotting on a mercator chart.

Radio bearings are useful in clear weather navigation as well as in fogs. For a vessel approaching the coast or a harbor entrance, radio bearings provide a valuable check on position from other sources and from dead reckoning.

Many navigators are using the direction finder as a help in avoiding collision in fogs, detecting with it the presence and observing the direction of approaching vessels.

Radio Direction Finder

The radio direction finder on the ship should be located conveniently to the navigator, so as to enable him to take radio bearings, and plot them on the chart. All deck officers should be practiced in observing radio bearings. It is important that the radio direction finder be an efficient instrument of good selectivity and modern design, and that it be maintained in an effective and reliable condition. It should be carefully caliberated and checked, as opportunity offers, by visual bearings, and frequent use should be made of it in clear weather as well as in fog in order that its capability and possible errors may be well known, and practice had in its use.

Careful rechecking and recaliberation, if necessary, should always be made following any structural changes, or alterations in the disposition of other radio equipment on the vessel, which might effect the original caliberation. Such continued practice in the use of the radio direction finder on board ship will give the navigator first hand information as to the reliability of the bearings he observes, and the value of the positions he obtains by this means.

On Approaching Lightships

The attention of mariners is directed to the serious dangers which may arise from the misuse of radio signals, and particularly to the danger of collisions with lightships operating such signals. The mariner who in thick weather approaches a radiobeacon directly ahead on a radio bearing, and relies on hearing the fog signal in sufficient time to alter course to avoid danger, is taking an unjustifiable risk.

The vagaries of sound fog signals are well known, and warnings regarding them are widely printed. Such signals may not be heard with certainty in time to avoid collision. Safety demands that all precautions be taken in approaching lightships. The risk of collision can be avoided by getting the radiobeacon on the bow, taking successive bearings, and insuring that the radio bearing does not remain constant. The angle between the course and the radio beacon should increase for a vessel passing clear.

Nearly half of the radiobeacons on the coast of the United States are placed on lightships, and these radio signals provide valuable marks for approaching the coasts and ports. In using radio bearings for approach, it is important that the course at all times be set to pass safely clear. Radiobeacons offer to navigators convenient means of checking this by methods well known in ordinary navigation, but sometimes overlooked in navigation by radio bearings.

Position Should be Checked

The navigator may check his position with respect to the lightship radiobeacon when steering to pass to one side, by taking successive radio bearings and using these with the intervening distances run, to ascertain the distances off from time to time. Radio cross bearings should be taken; also soundings should be taken, and the effect of currents should not be overlooked. Where warning radio beacons and direct distance finding facilities are provided, they should be utilized.

It is understood, of course, that the caution in passing lightships at a safe distance, and approaching them, using all care, applies to all lightships, whether or not they are fitted with radiobeacons, and it applies also to radiobeacons at lighthouses which may be approached close to.

In preparing these notes, the lighthouse service has taken advantage of many reports from practical mariners, who systematically use radio direction finders or radio compasses in navigation. It is evident that great interest has already been directed to the problem of radiobeacon navigation. The lighthouse service invites further suggestions and reports and these may be sent to the commissioner of lighthouses, Washington, D. C.

The Alabama Dry Dock & Shipbuilding Co., Mobile, Ala., has acquired group life insurance totaling in excess of $400,000 for the protection of employees, according to the Prudential Insurance Co. of America. Each employe is eligible to protection in amounts ranging from $500 to $5000. The insurance is of the contributory type, the premium being shared by the employees and the employing company.

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NEW YORK CITY

Marine Review

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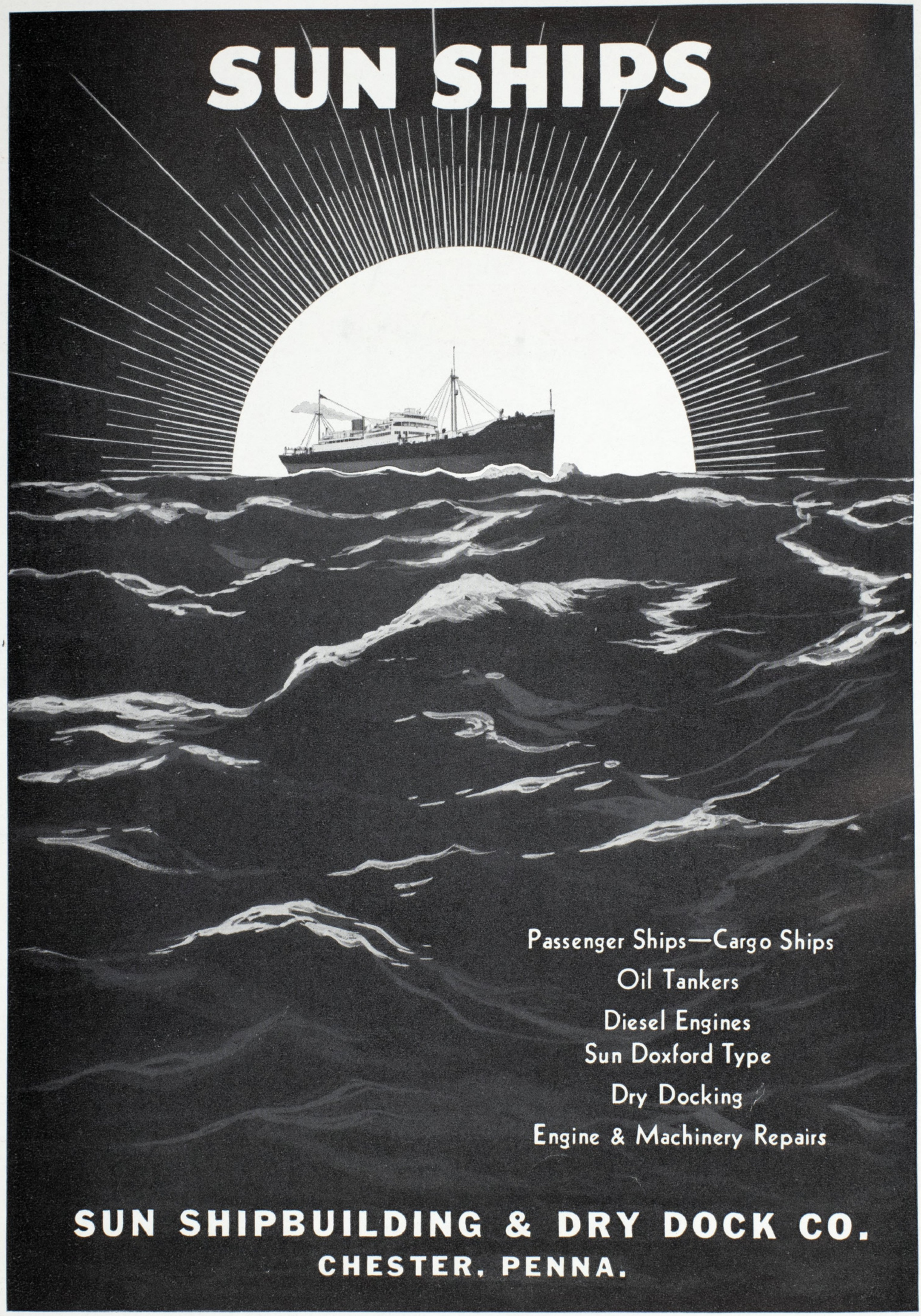
The National Publication Covering the Business of Transportation by Water

Tanker—Socony-Vacuum

April 1935

SUN SHIPS



Passenger Ships—Cargo Ships
Oil Tankers
Diesel Engines
Sun Doxford Type
Dry Docking
Engine & Machinery Repairs

SUN SHIPBUILDING & DRY DOCK CO.
CHESTER, PENNA.

Vol. 65, No. 4, April, 1935, issue of MARINE REVIEW, published monthly at Cleveland, O. Entered as second class matter at the post office, Cleveland, O., under act of March 3, 1879. Subscription price $3 a year in U. S.; Canada, $4; Great Britain and other foreign countries. £1. Single copies, 35c

Linde Process Service

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$354

FULL STEAM AHEAD—Quick-time repair by bronze-welding fractured steam hammer cylinder saves money—cuts delay on job.

IT looked as if nothing could prevent the expenditure to replace the fractured steam hammer cylinder on the foundation company's pile driver.

A Linde Service Operator was called and, on examining the cylinder, found that it could be made as good as new by bronze-welding. With his cooperation the work was rapidly completed. The cost of materials and labor amounted to about $31—a saving of $354 over the cost of $385 for a new cylinder. Tests proved that the bronze-welded repair was fully capable of withstanding the severe service of everyday operation. The foundation company was highly pleased with the result.

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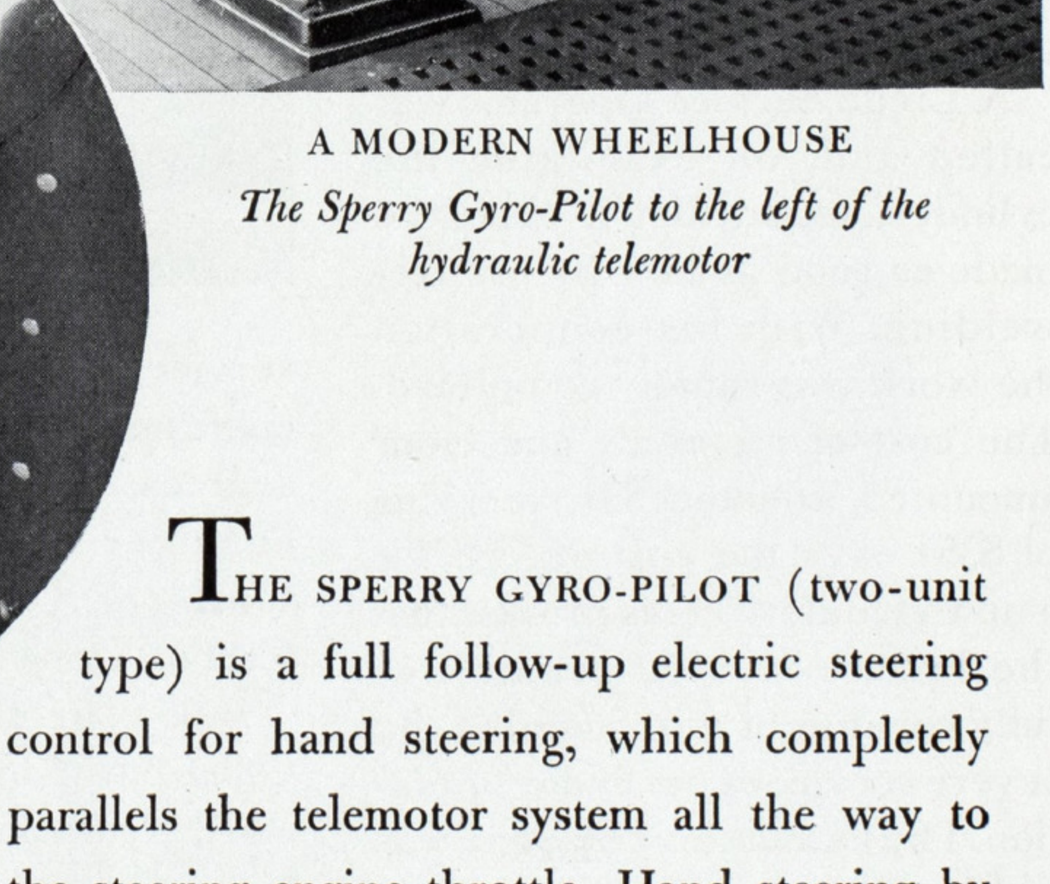
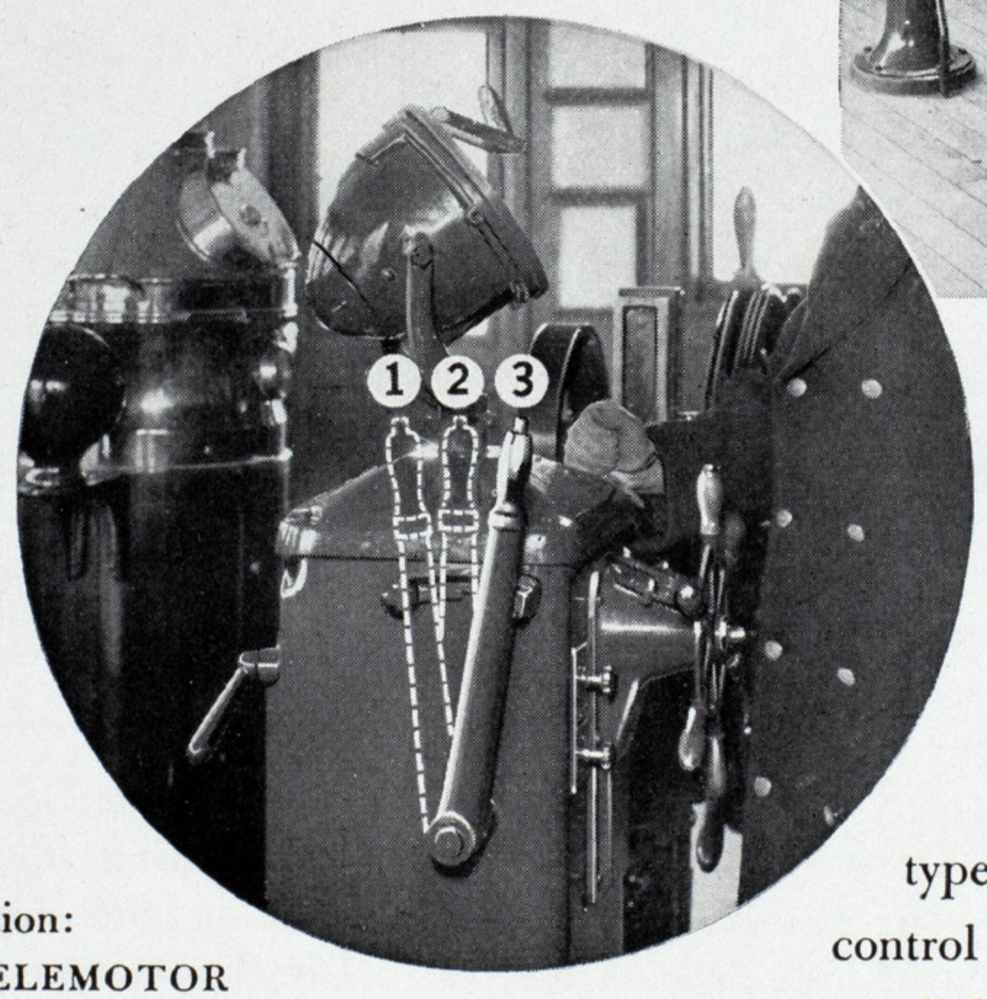


A MODERN WHEELHOUSE

The Sperry Gyro-Pilot to the left of the hydraulic telemotor



Lever Position:

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Shift-over made at steering position
No other operations are necessary

THE SPERRY GYRO-PILOT (two-unit type) is a full follow-up electric steering control for hand steering, which completely parallels the telemotor system all the way to the steering engine throttle. Hand steering by telemotor, hand steering by electric control (built into the Gyro-Pilot) and automatic steering are all available for instant use by the Officer of the Watch.

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THE S. S. AMOR, one of the Royal Netherlands Steamship Company's freighters which operates between New York, the Dutch West Indies and South America. Gulf lubricants are used.

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THE CLYDE MALLORY Line's crack passenger ship S. S. Cherokee is another in the long list of ocean liners which use Gulf quality marine lubricants for safe, economical operation of their power plants.

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Gulf's complete line of quality lubricants permits the choice of exactly the right type of oil or grease for each moving part. This means the most efficient lubrication possible.

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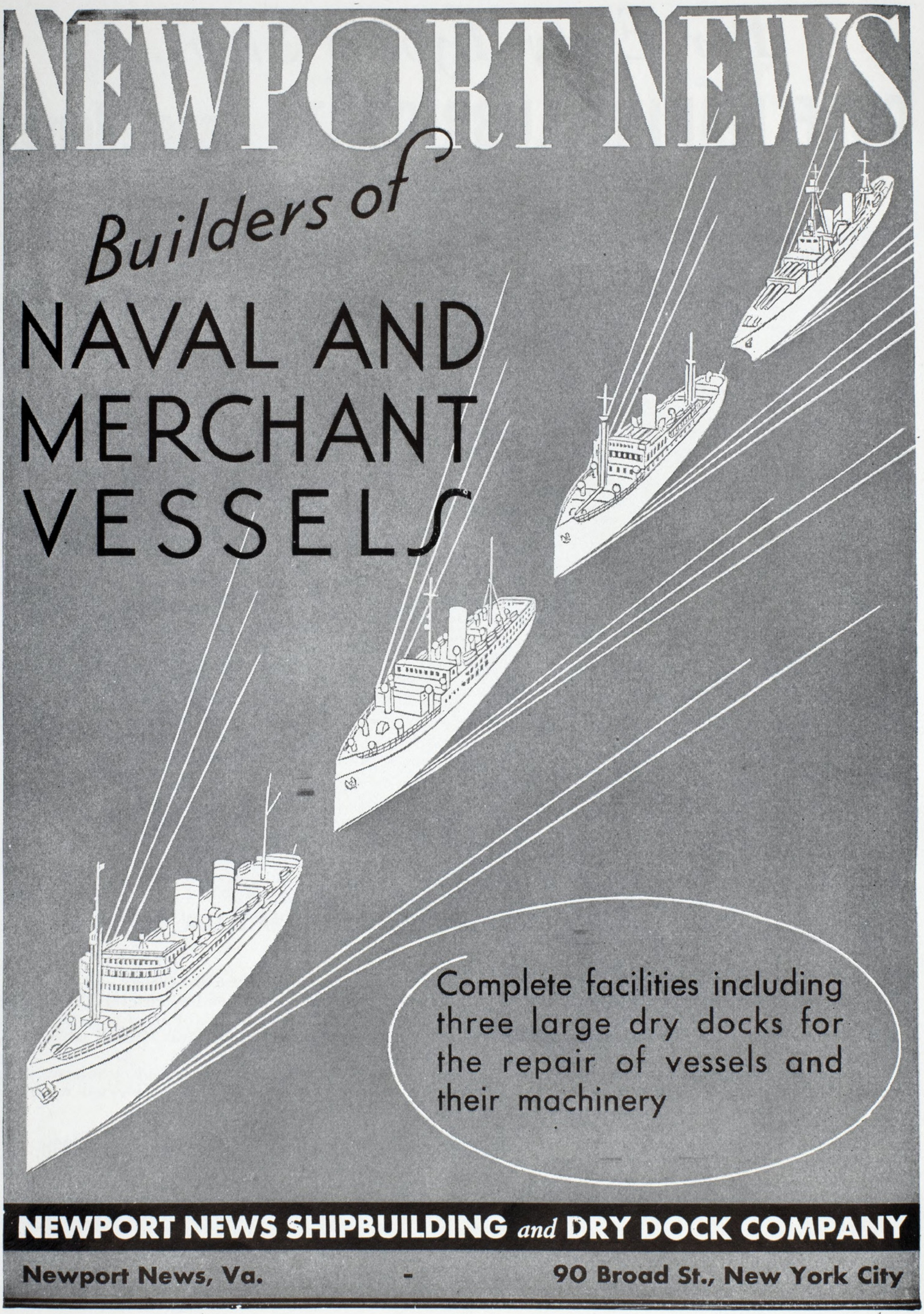

Complete facilities including three large dry docks for the repair of vessels and their machinery

NEWPORT NEWS SHIPBUILDING *and* DRY DOCK COMPANY

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THE *New* BODENLOS
ADJUSTABLE PLUG PISTON
Offers These Five Superiorities

1. Readily adjusted to take up wear
2. Can be adjusted in the cylinder
3. A true circle at all diameters
4. Cannot steam set
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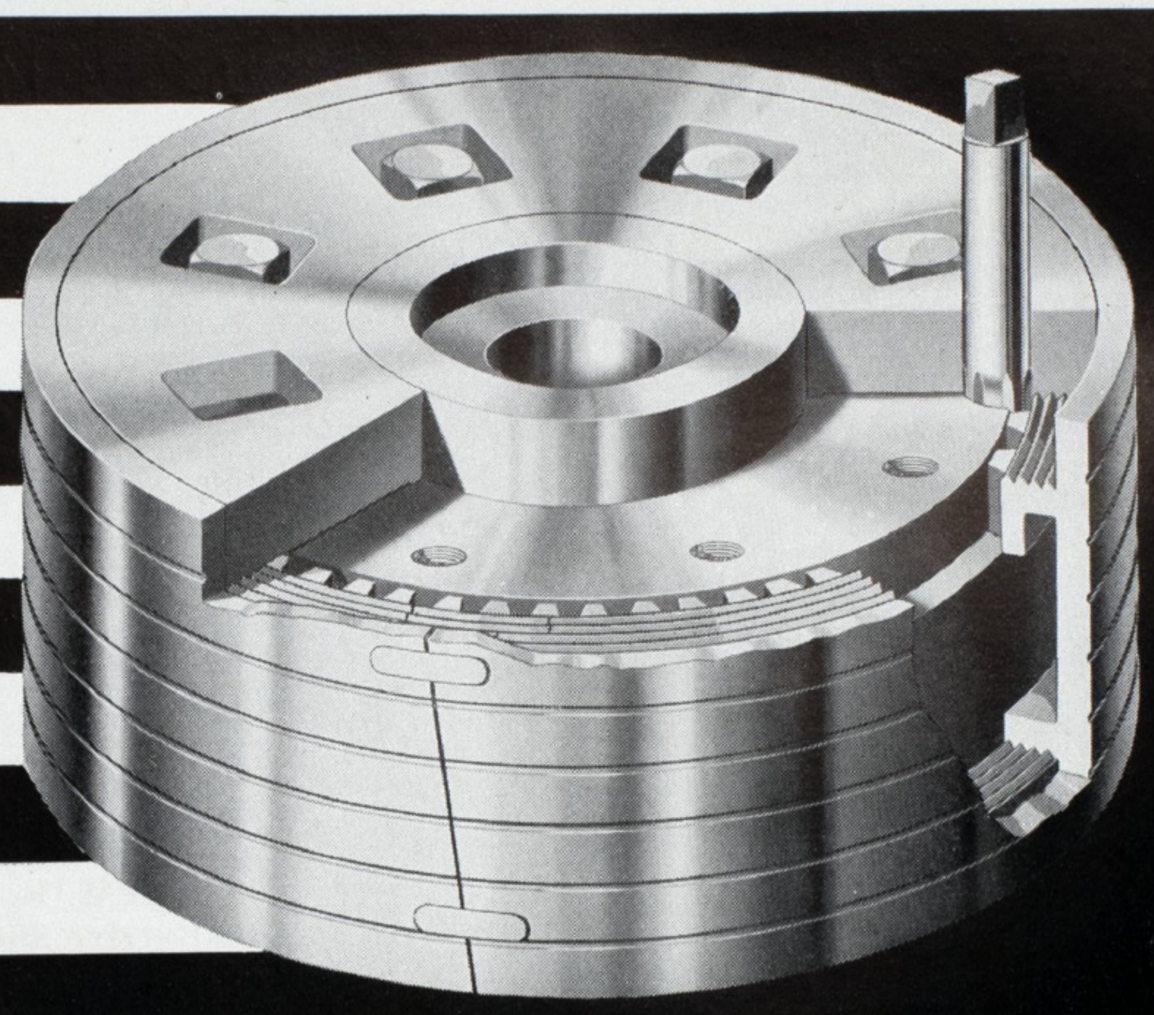

Adjusting is accomplished by loosening the follower, removing a small plug and inserting a tool in the pinion. This engages a rack, as shown in the cutaway. The pinion is turned until the "feeler" used indicates proper clearance. The follower bolts are then screwed down tight, the tool is replaced by the plug and the piston is solid once more.

THE plug piston is well known to engineers as the simplest, most reliable type of piston. It is safe because it cannot steam set . . . cannot harm cylinder walls.

But the ordinary plug piston becomes worn after a short time in use and develops steam leaks. This means lost power . . . and waste.

The new Bodenlos ADJUSTABLE Plug Piston can be adjusted at any time, *without removal from the cylinder*, to a small fraction of 1/1000 of an inch. It can readily be made smaller or larger, as desired, and can be adjusted in a few minutes at any point in piston travel.

The new Bodenlos ADJUSTABLE Plug Piston is a true circle at all diameters and adjustments. It is made of finest cast iron and will wear indefinitely. It will soon develop a mirror-like polish and it can always be kept tight against the cylinder walls, with the correct tolerance.

This revolutionary new plug piston is especially adapted for super heat and high steam pressure.

Write us for further information.

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TRUE LEADERSHIP

Authentic records show that of the self-propelled merchant steamships of more than five-hundred horsepower built within the past six years, 88 per cent of the total horsepower is generated in Babcock & Wilcox Marine Boilers.

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BABCOCK & WILCOX

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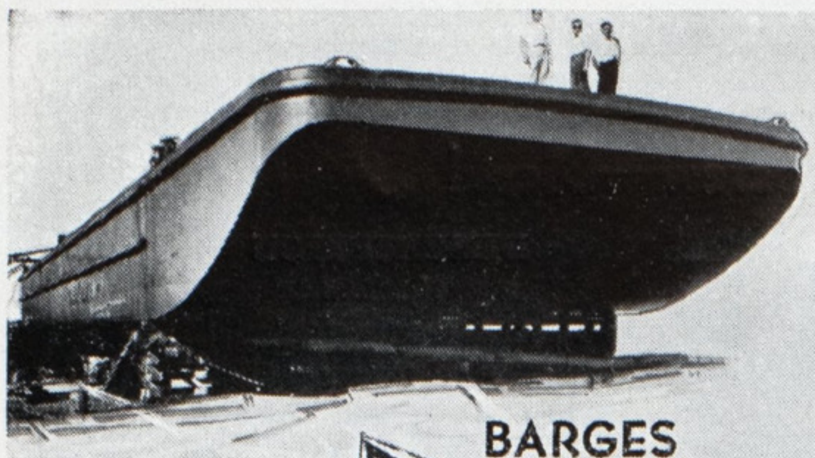
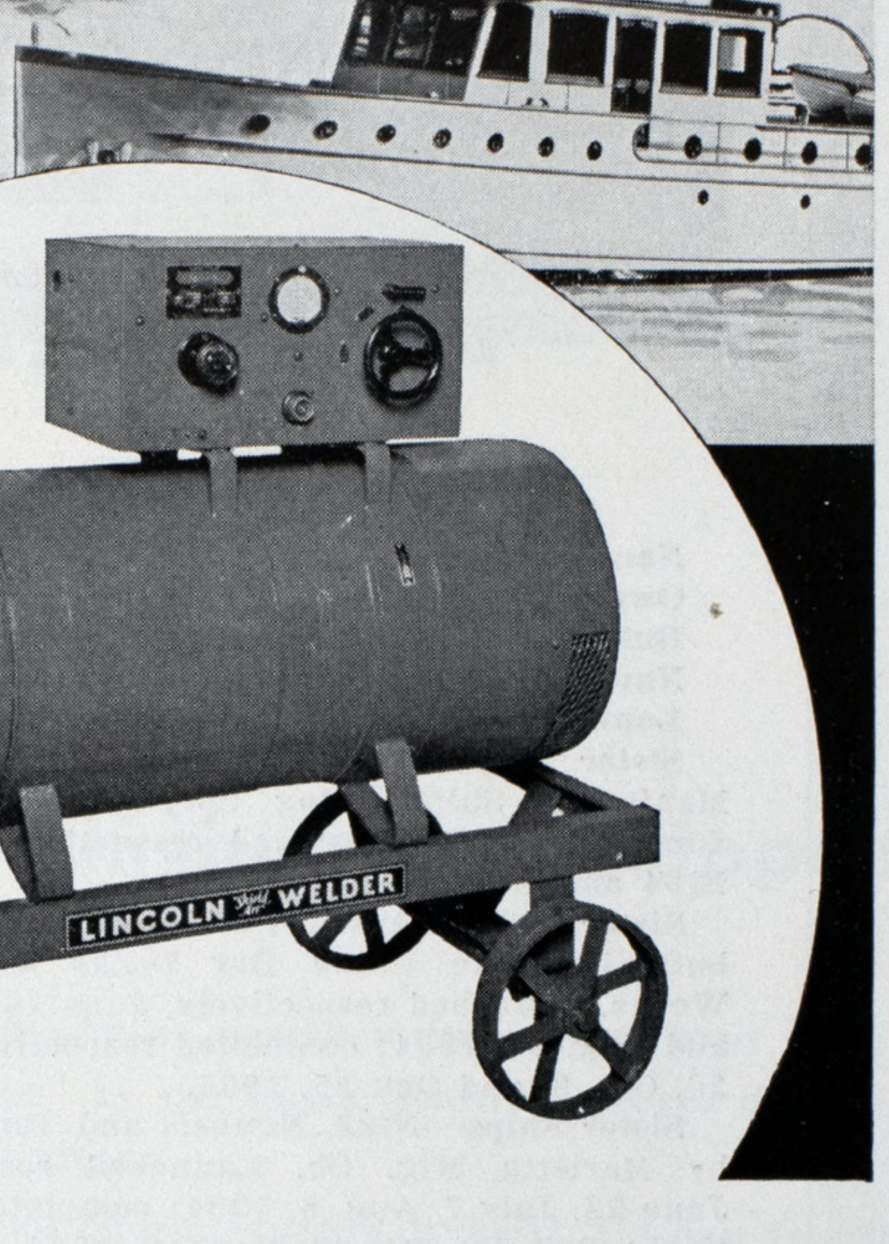


BARGES

TUGS

PLEASURE CRAFT



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FASTER WELDING. Better welds. Lower costs. These are the profits of progress. You get them *all* when you weld with a *"Shield-Arc."* Because it is the only welder having all the time-saving, labor-saving, power-saving and material-saving features which allow you to get the most out of welding.

"Shield-Arc's" uniform welding current puts more of the electrode metal into the weld—and does it faster. You can turn on the heat without excessive splatter and waste of metal.

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Eight other features, all contained in no other welder, contribute their savings to your profits. *"Shield-Arc"* welders are guaranteed three ways to give you *all* the profits of progress in arc welding. Find out now how big these profits are. Ask the Lincoln Electric Co., Cleveland, Ohio. Largest Manufacturers of Arc Welding Equipment in the World.

W-127

POP "I've always believed in the 'cut and try' method. But with 'Fleetweld' electrodes, it's a case of try first and the cutting will take care of itself—in our case, the cutting was 20% of former welding costs."

LAD "Righto—and the welds made with 'Fleetweld' are equal to or better than mild rolled steel in every respect, including resistance to corrosion. Ask Lincoln for proof."

LINCOLN

"SHIELD-ARC" WELDERS

The Algonquin, first of the three Cutters to be completed.

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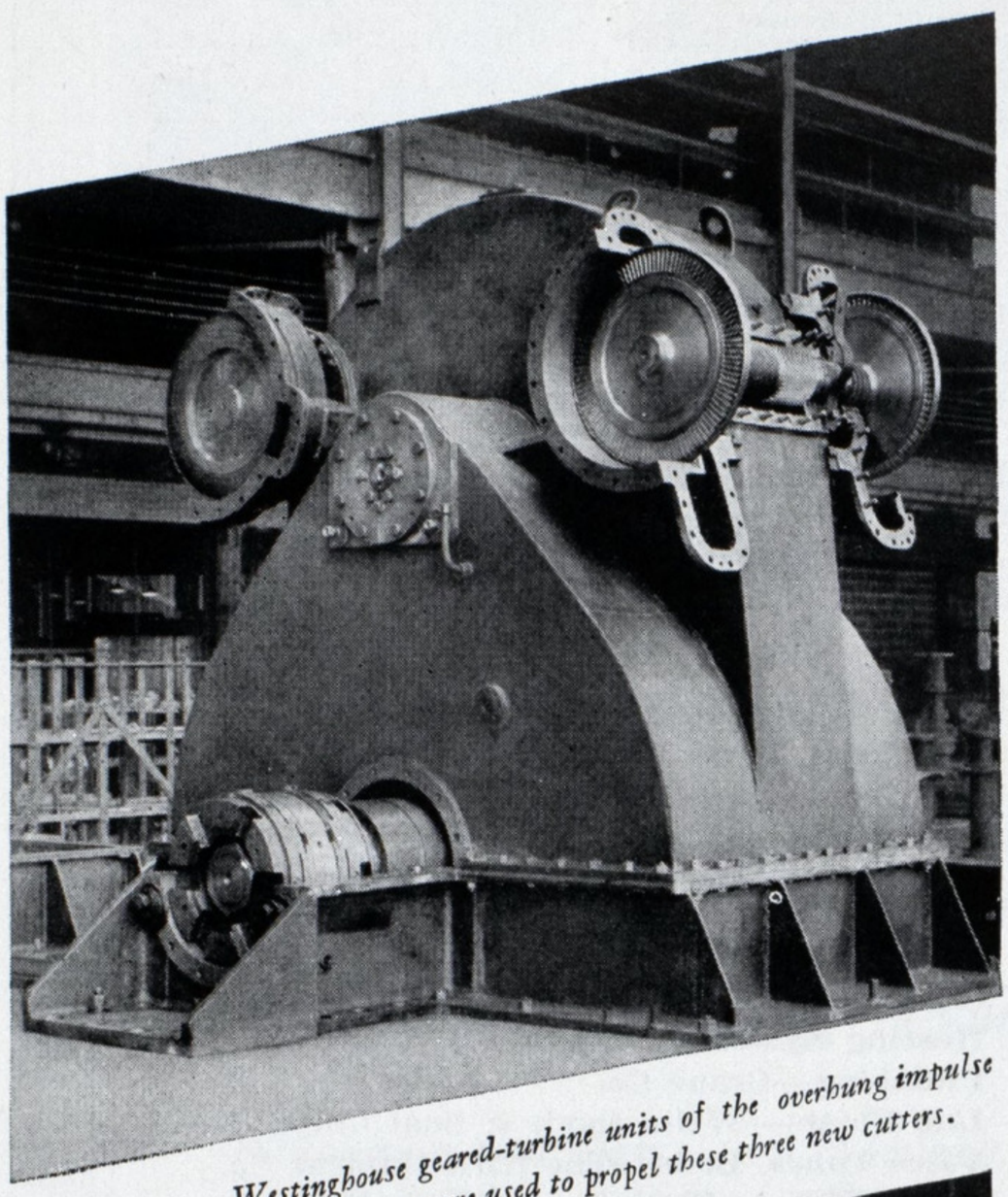
★ ALGONQUIN

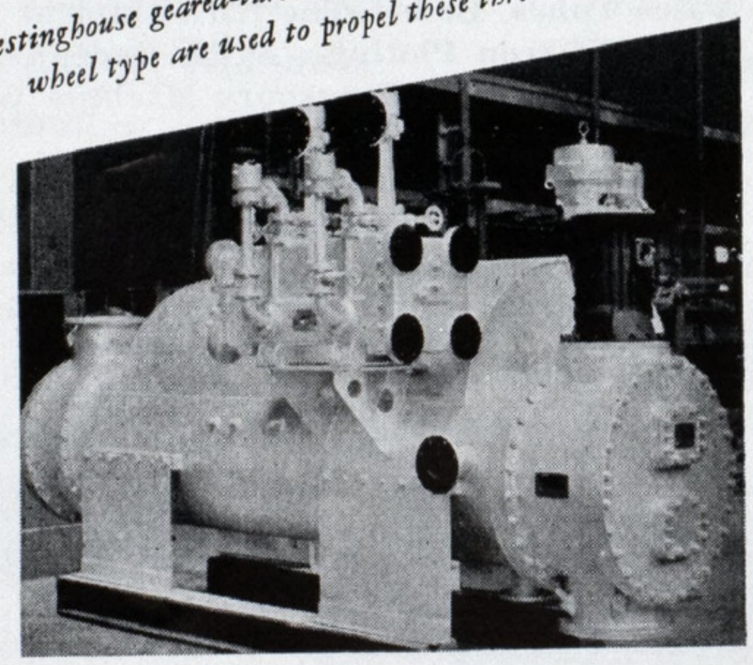
★ COMANCHE

★ MOHAWK

Westinghouse Equipped



Westinghouse geared-turbine units of the overhung impulse wheel type are used to propel these three new cutters.



Westinghouse 1080 sq. ft. main condenser with water-box-type circulating pump.

● Westinghouse geared turbines have been "commissioned" by the Coast Guard to propel three of its new cutters.

Like all cruising cutters of the U. S. Coast Guard, these vessels have been designed to stay at sea in any weather and for making rescues under the most adverse conditions.

The geared turbines are of radically different design from *conventional* geared turbines. The turbine wheels are overhung on the high-speed pinion shafts of the gear unit, making a *compact power plant whose weight is approximately half that of other geared turbines of the same shaft horsepower.*

In such vessels as the tug *Harry B. Williams,* the canal barges *Edgewater* and *Chester* and the dredges *Sinaloa* and *Turbo,* these compact power plants have proved to be economical, reliable and capable of withstanding the most severe maneuvering. Their acceptance by the Coast Guard is another confirmation of their fitness and efficiency.

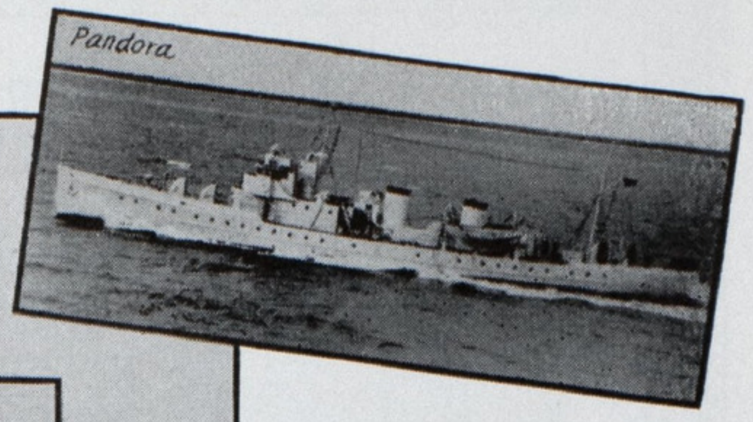
★Each of the three Cutters carry the following Westinghouse steam and electrical equipment:

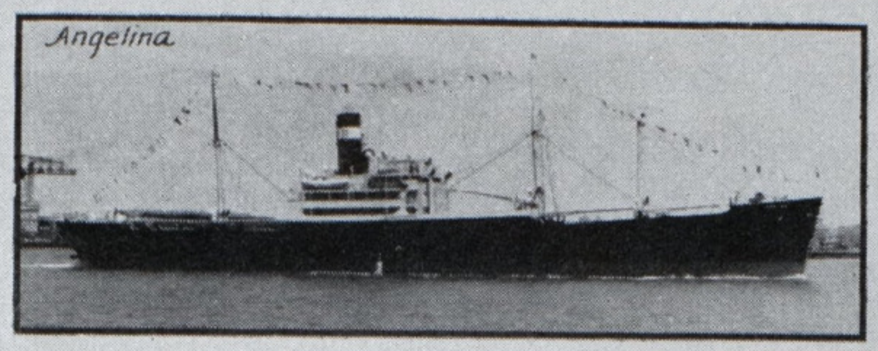
Main geared-turbine unit; main condenser with circulating and condensate pumps; two auxiliary condensers; main and auxiliary condenser air ejectors; two motor-driven condensate pumps; two motor-driven lubricating oil pumps; two lubricating oil coolers; two auxiliary turbine-generator units.

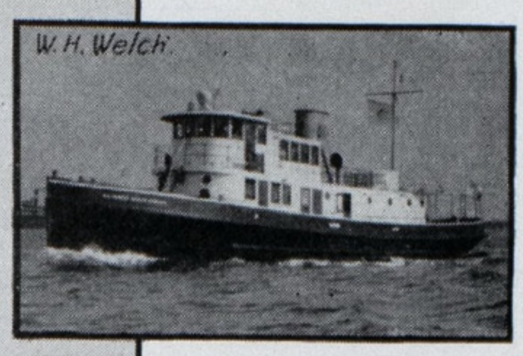
Westinghouse Electric & Manufacturing Company
South Philadelphia Works Philadelphia, Pa.

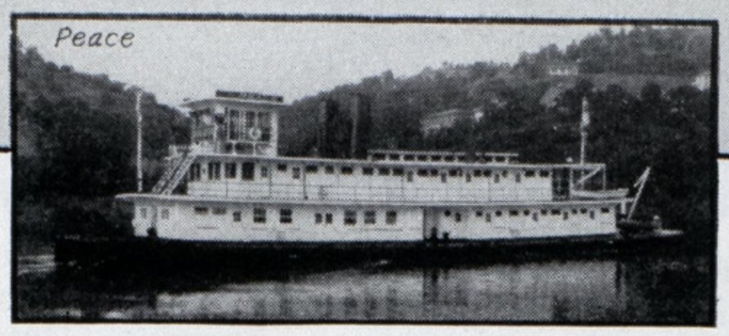
R 68006

Westinghouse









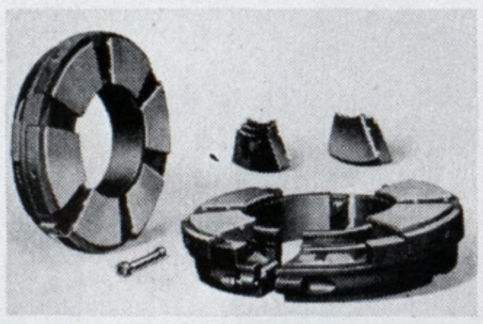
Propeller Thrust Bearings

were furnished by

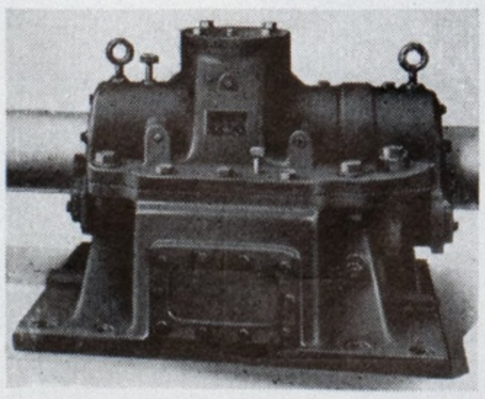
KINGSBURY

for the following vessels described in this issue:

Algonquin and Class
Angelina, Manuela
Coiner
Hemlock
Onondaga and Class
Pandora and Class
Peace
Tamarack
Thomas Whalen and Class
W. H. Welch



Six-Shoe Bearing for Heavy Duty



Style GF, Combined Thrust and Journal Bearing

Kingsbury Thrust Bearings are used also on the main dredge pumps of dredges *William S. Mitchell* and *William M. Black*.

In addition: *Poughkeepsie Socony* and class, *Regent*, and *Socony Vacuum* are equipped with Kingsbury Thrust Bearings built under license by McIntosh & Seymour.

The uniform performance, absence of wear and indefinitely long life of Kingsbury Thrust Bearings have been demonstrated in the marine field ever since they were first used in 1915. They exhibit the science of oil wedge film lubrication in its highest form.

Other Kingsbury Bearings, both Thrust and Journal types, are made in standard sizes for power boats, steam turbines, high speed auxiliaries, etc., in sizes down to 2 in. shaft diameter. Bulletin G-1 covers medium to large sizes: Bulletin S covers smaller sizes for power boats, etc.

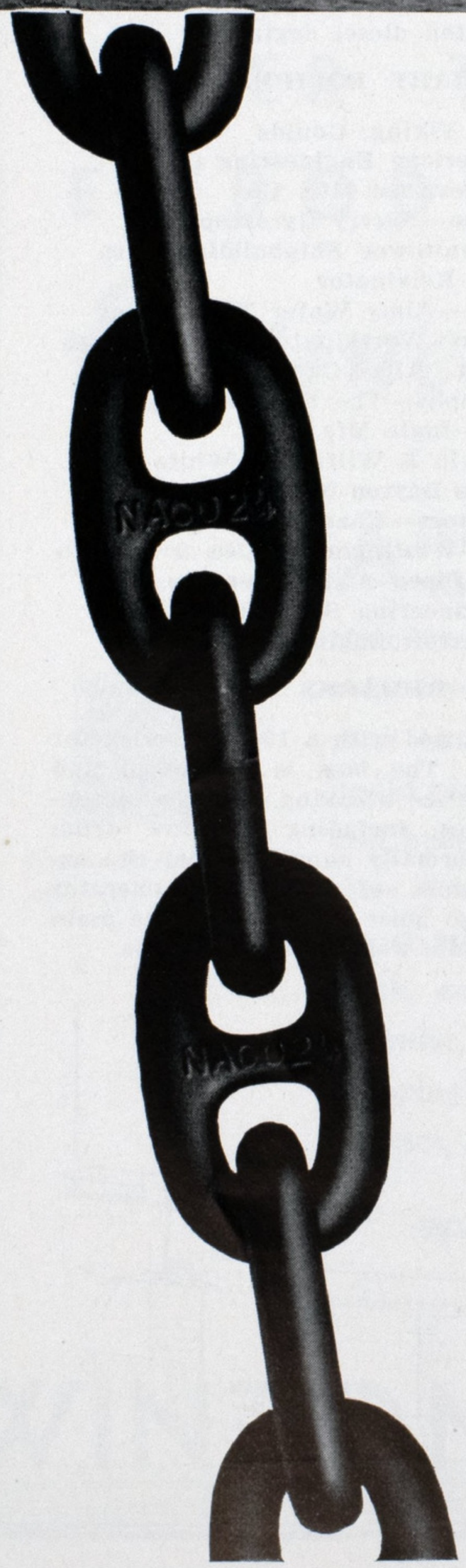
Thrust Meters for accurate determination of propeller thrusts.

KINGSBURY

KINGSBURY MACHINE WORKS, INC.

4316-28 Tackawanna Street,
Frankford, Philadelphia, Pa.

Socony Oil Barge Poughkeepsie



The three new "Socony" oil barges

POUGHKEEPSIE-SOCONY
NEW HAVEN-SOCONY
PLATTSBURGH-SOCONY

built by United Drydocks Inc., Staten Island, N. Y. are equipped with

NACO ANCHOR CHAIN

as will also be the two new 15,000-ton Socony tankers

SOCONY VACUUM

and

MAGNOLIA

being built by New York Shipbuilding Company, Camden, N. J. for the Socony Vacuum Oil Co.

— – —

For Maximum Strength and Reliability be sure and specify

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Manufactured only by

NATIONAL MALLEABLE AND STEEL CASTINGS CO.
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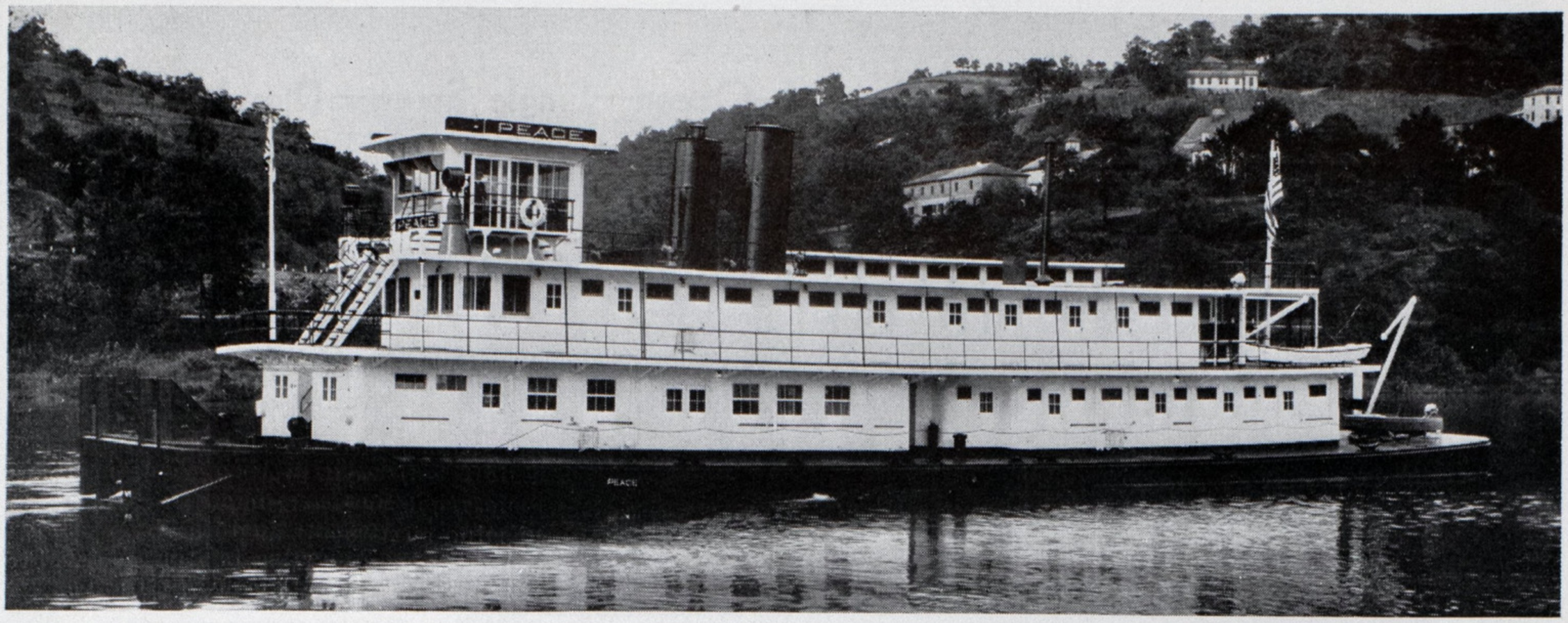

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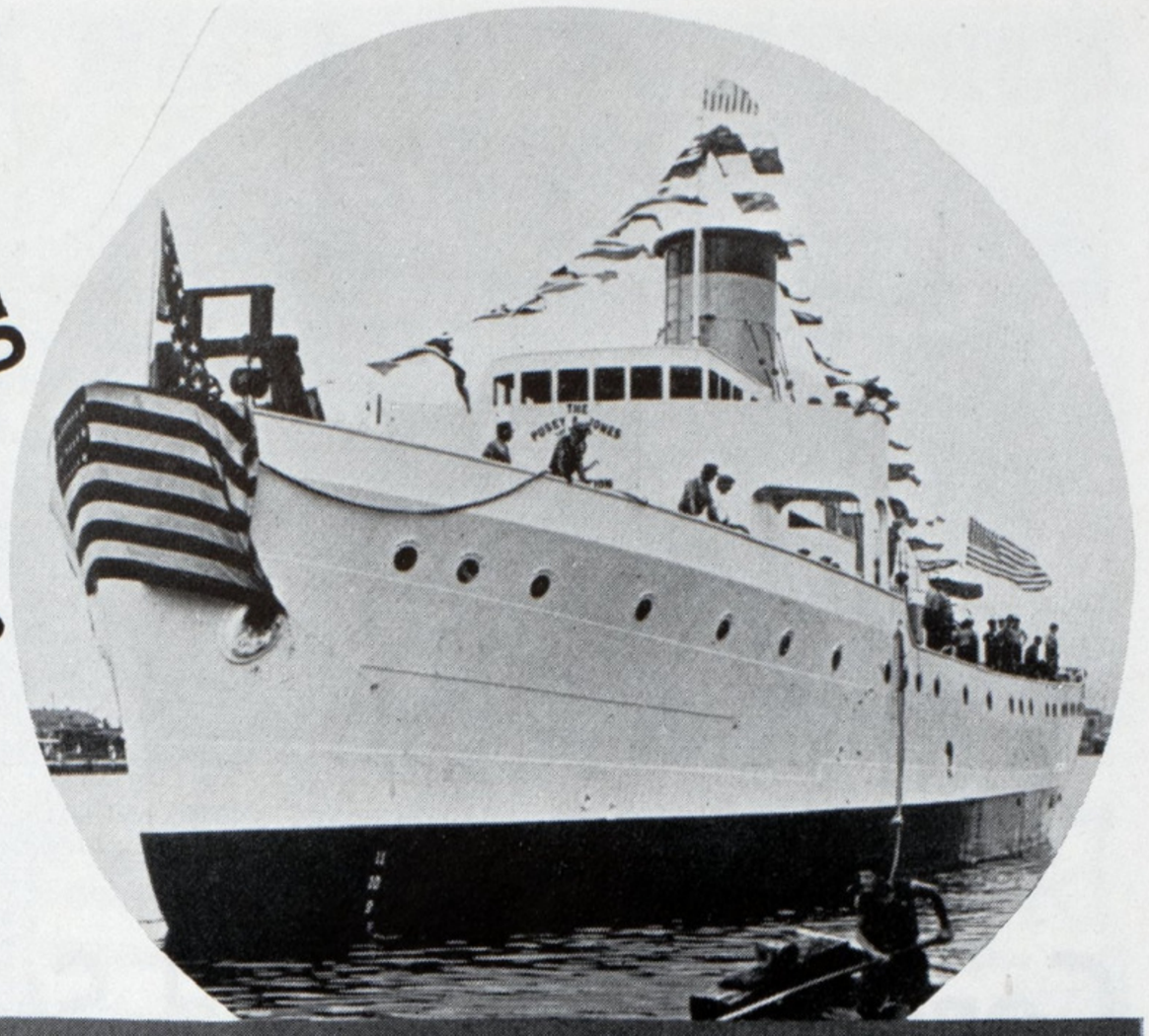

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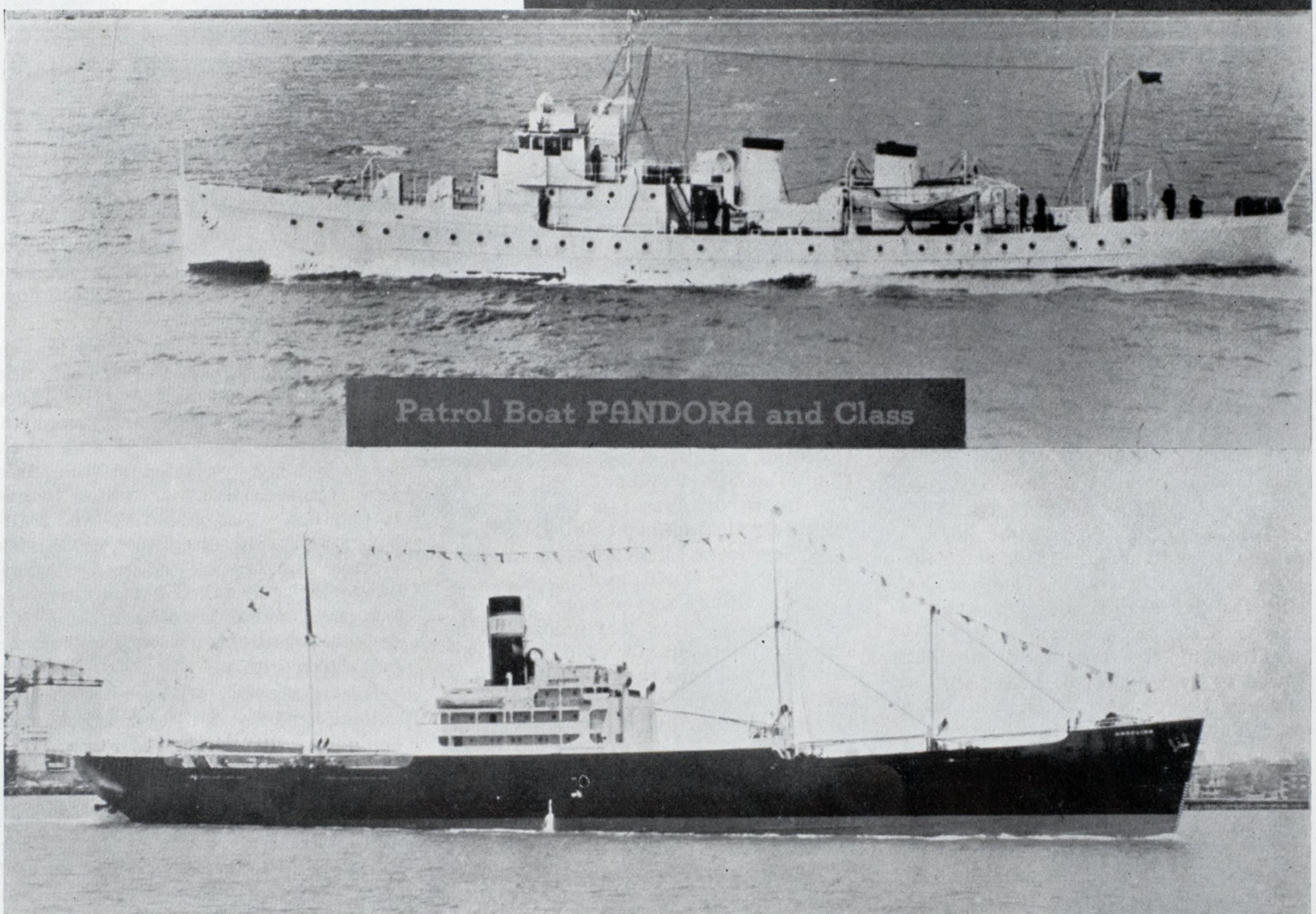

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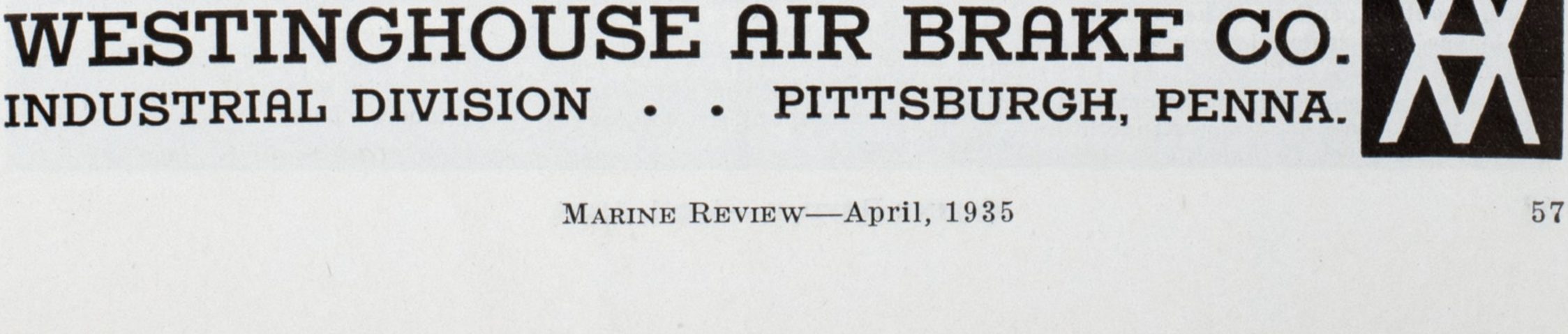

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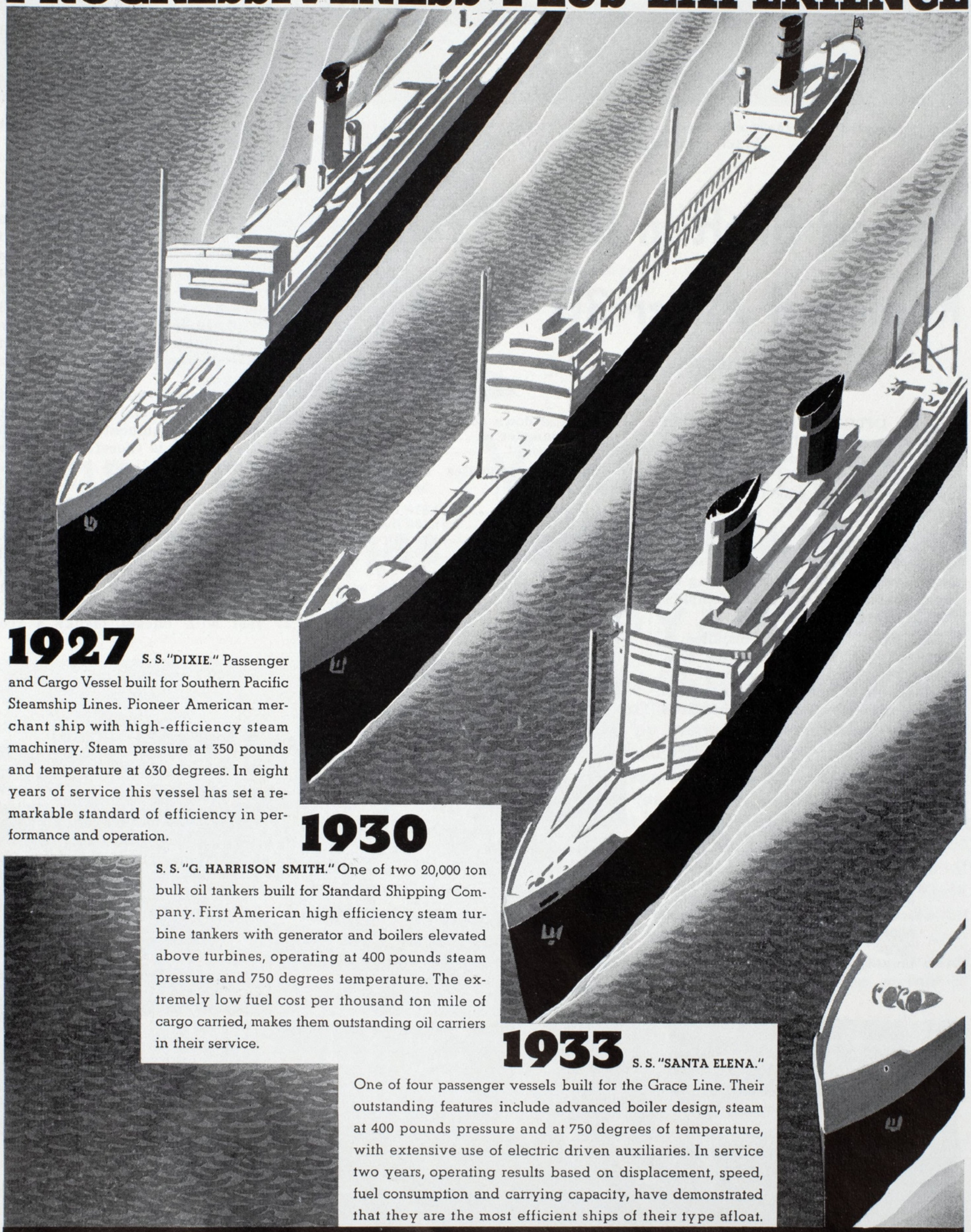

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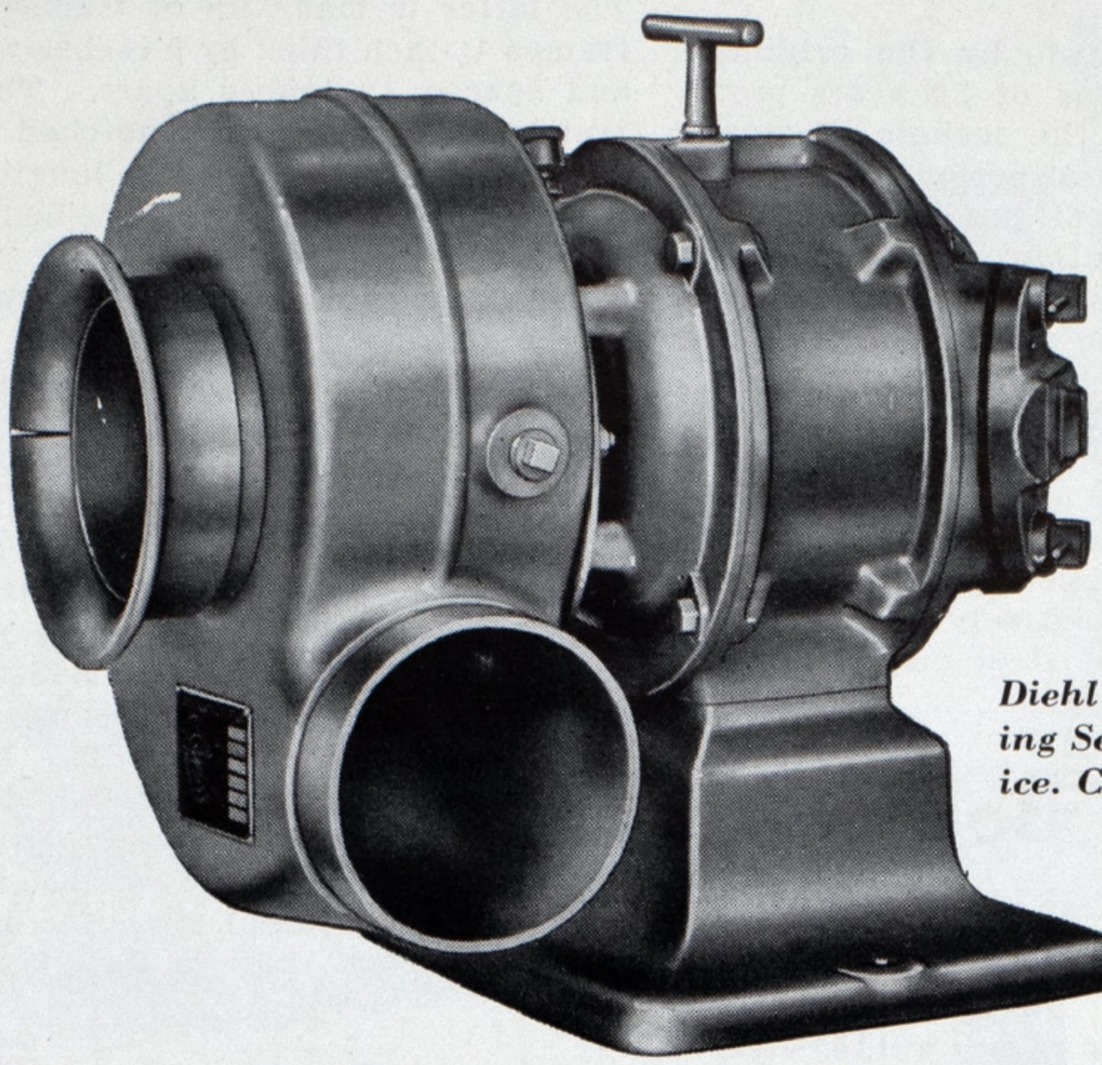

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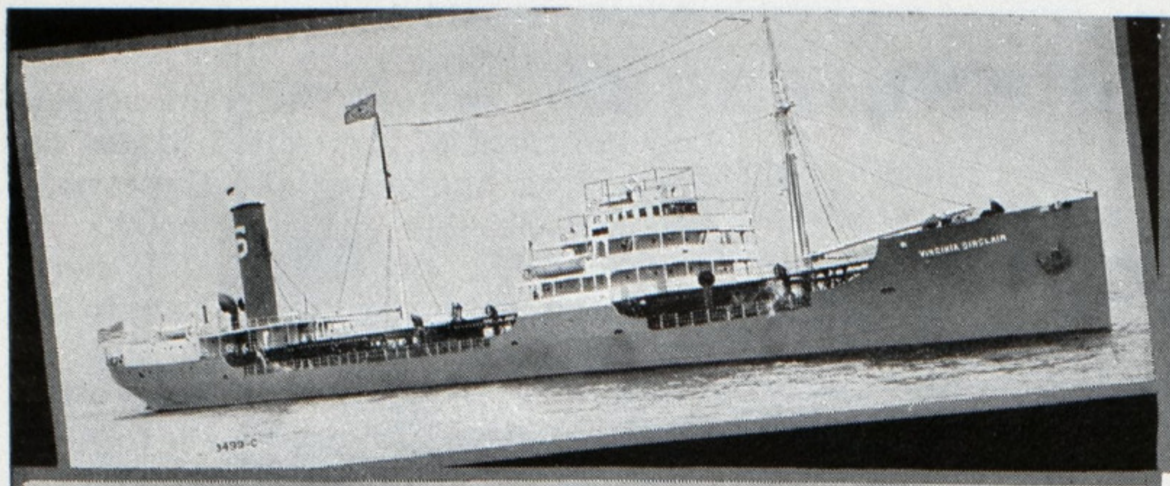

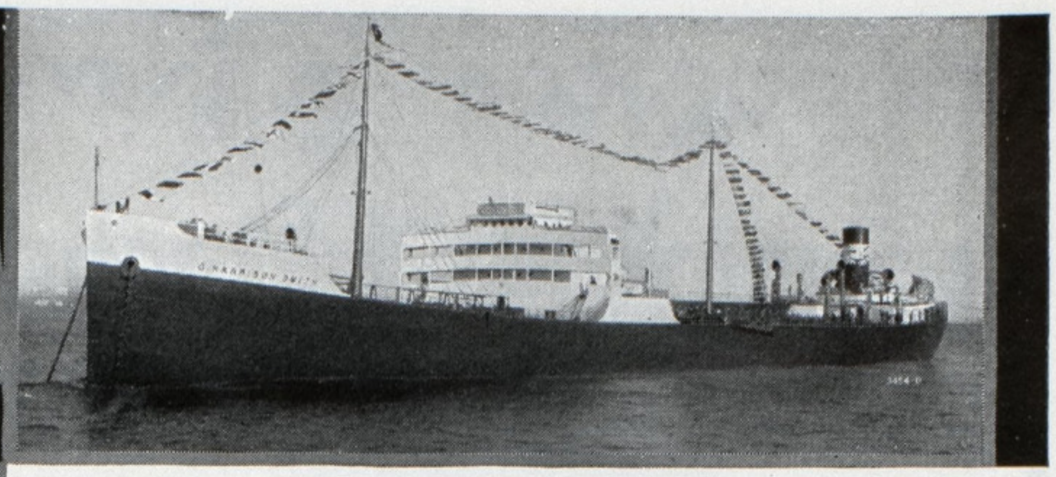

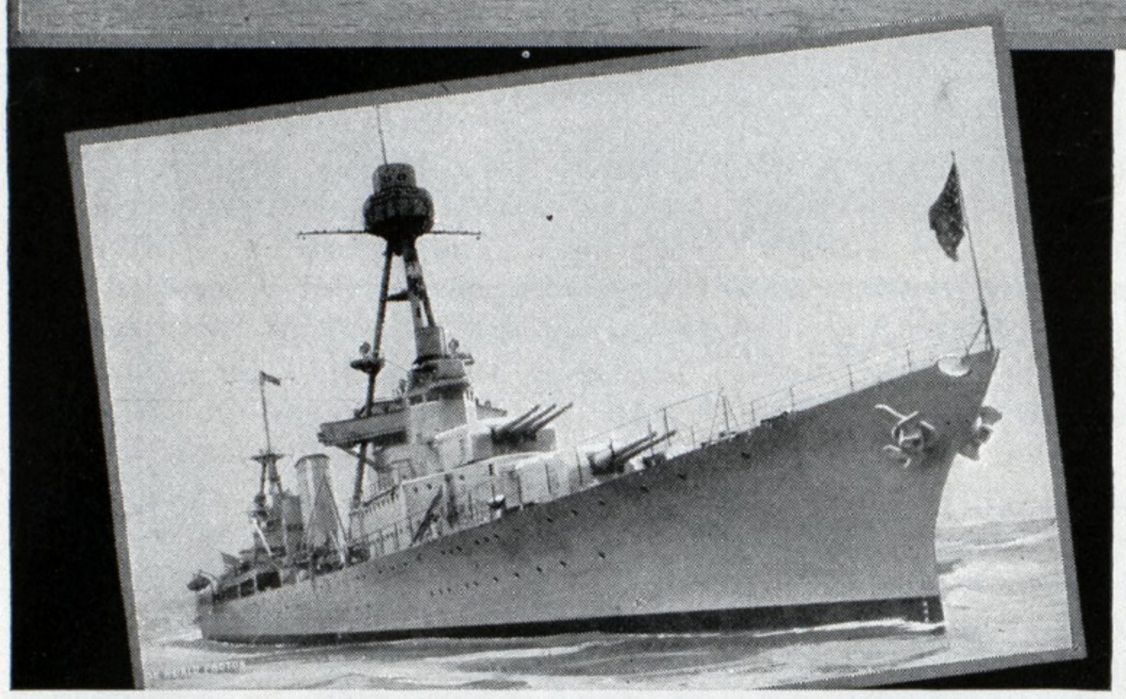

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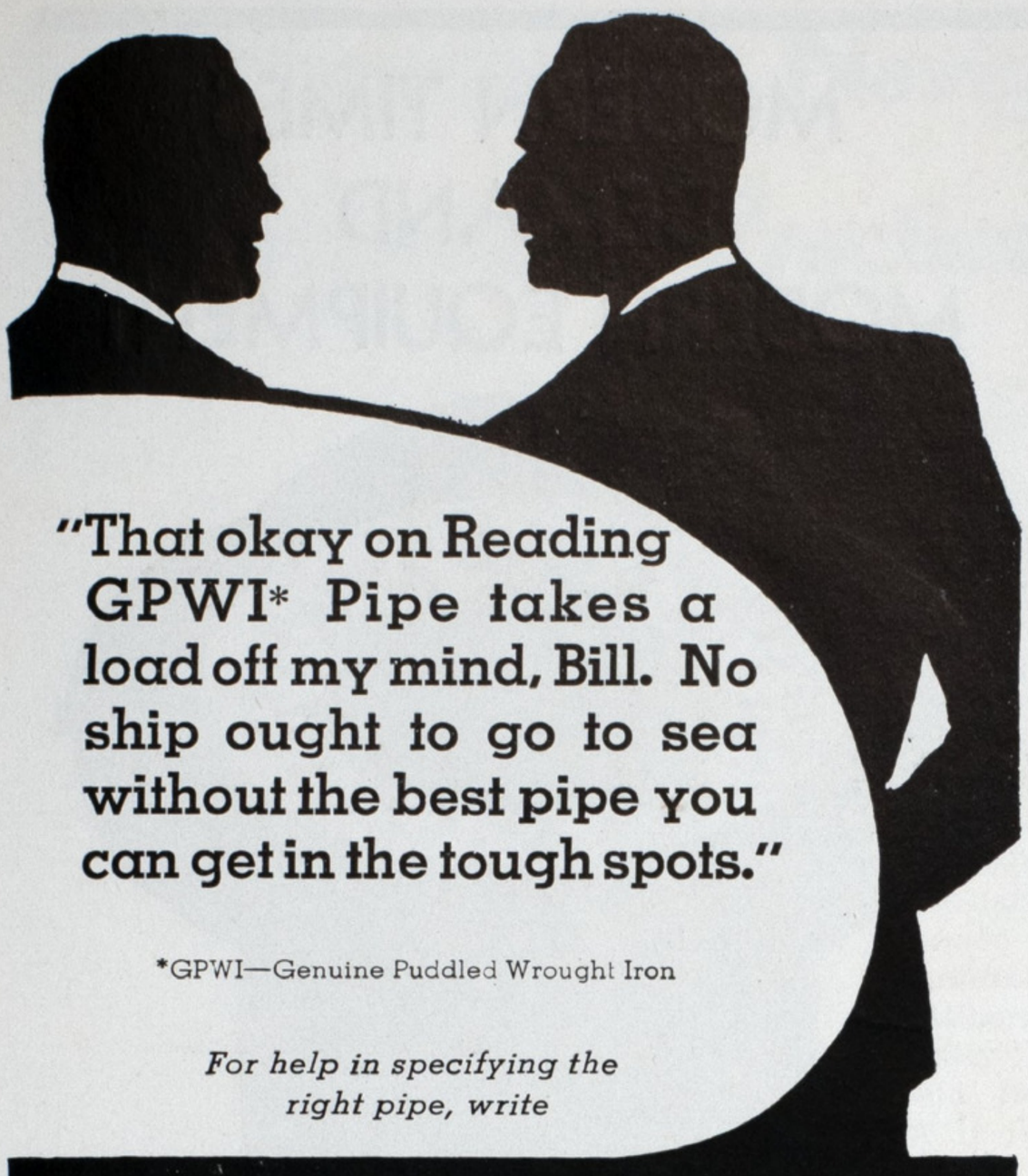

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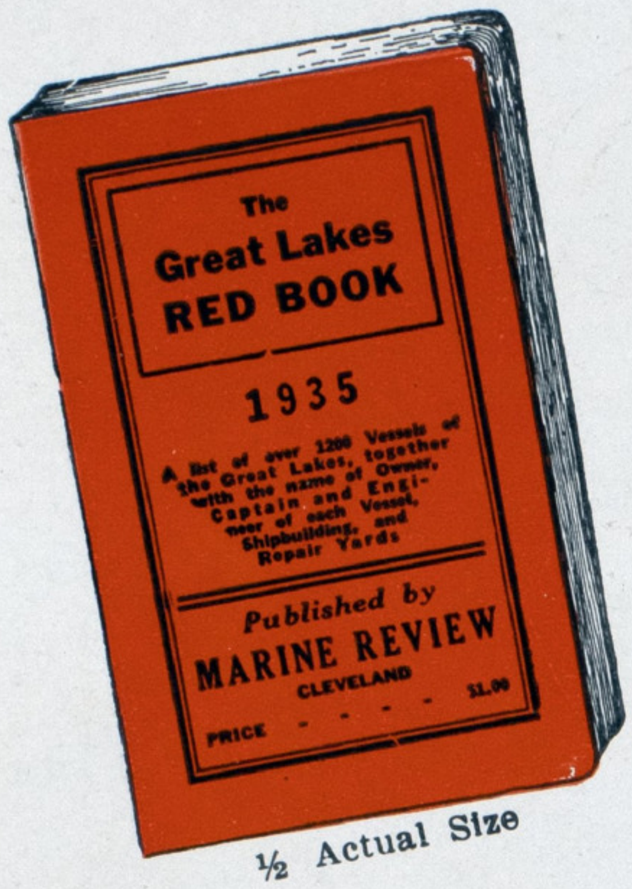
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